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# CLASS III.

## CLASS III.

# HÆMATICA.

DISEASES OF THE SANGUINEOUS FUNCTION.

ORDER I.

PYRECTICA.

FEVERS.

II.

PHLOGOTICA.

INFLAMMATIONS.

III.

EXANTHEMATICA.

ERUPTIVE FEVERS.

IV.

DYSTHETICA.

CACHEXIES.

# CLASS III.

## PHYSIOLOGICAL PROEM.

In treating of the very important and extensive range of diseases, included under the present class, let us first take a brief survey of the sanguineous function, which is the immediate theatre of their operation, and the means and instruments by which it is maintained. Cl. III. Proposed scope of inquiry.

This comprehensive subject may be most conveniently discussed under the three following divisions: General division.

I. THE MACHINERY OF THE SANGUINEOUS SYSTEM.
II. ITS MOVING POWERS.
III. THE NATURE OF THE FLUID CONVEYED.

I. The importance of the blood to the general health of the animal system, and its existence in every part of almost every organ, have been known in every country, in which medicine has been studied, from the first dawn of its cultivation. It is not necessary to retrace the wild and idle hypotheses that were started in ancient times to account for the means by which this universal fluid travels from one part to another, and appears in every quarter. It is enough to observe, that, till the great and transcendent doctrine of the circulation of the blood was completely established, the acutest physiologists wandered about in darkness and uncertainty, seldom satisfying themselves, and, still more rarely, the world around them. I. Machinery of the sanguineous system. Unsatisfactory hypotheses of the ancients.

I. Machinery of the sanguineous system.

A circulation loosely suspected by the ancients.

The opinion, indeed, of a circulation of the blood through the system was loosely started by various writers even of very early times; but, under every modification, it was found to be accompanied with so many difficulties as always to be dropped almost as soon as it was revived, and rarely, till the middle of the seventeenth century, to show itself to any effective purpose. Hippocrates guessed at it; Aristotle assented to it; Servetus, or Servede, who was burnt as a heretic in 1553, imperfectly taught it by pointing out the smaller circulation, or that through the lungs; and our own illustrious countryman, Harvey, about a century afterwards, gave a finish to the inquiry, by establishing the larger circulation, or that over the whole frame.

Proofs of the circulation.

The principal proofs of a circulation of the blood offered by Harvey, and those, indeed, on which we chiefly rely in the present day, are deduced from the disposition of the valves at the origin of the two great arteries; from the mechanism of the valves in the veins; and from the arrangement of those of the heart; from the possibility of draining an animal of its blood by opening either an artery or a vein; from the range of the arteries and the veins, and from what occurs when either the arteries or veins are opened, compressed, tied, or injected. All the valvular contrivances, to which a reference has been made, prevent the blood from taking any other course, than what the present doctrine of the circulation inculcates. If we open an artery, the blood that jets from the puncture flows in a direction from the heart; and in a direction to the heart, if we open a vein. A compression or ligature upon an artery, puts a stop to the blood that flows from above the ligature; but the same upon a vein puts a stop to the blood from below it, in which direction the vein immediately becomes distended. In like manner, an acid liquor, injected into the veins, coagulates the blood in the direction towards the heart, proving that the venous blood is every where travelling in this course. While an examination by the microscope of the half-transparent vessels of frogs, and other cold-blooded animals, confirms the view laid open by these phenomena, and shows to us a continual flow of the blood from the heart into the arteries, thence into the veins, and thence to the heart again; thus completing the circular career.

The arteries, therefore, generally speaking, terminate in veins; but by no means the whole of them, for many are exhalant or secretory, and terminate on the surface of membranes and other organs by minute orifices; which no microscope, however, has yet discovered, but whose existence we have every reason to believe, as we perceive a perpetual oozing of fluids, whose flow we cannot otherwise account for, into all the cavities of the body; which keeps their surfaces moist, and makes motion easy. While, according to M. Magendie, whose experiments, however, seem to want confirmation, other minute arteries terminate in lymphatics, which he makes as much a part of the sanguiferous system as the veins; the lymphatics conveying the more attenuate part of the arterial blood, slightly tinged of an opaline or rose-coloured hue, though sometimes of a madder-red; such as the fluid which oozes upon puncturing the lymphatics, or the thoracic duct after a long fast. It is not necessary to examine into the correctness of this hypothesis in the present place, as we shall have occasion to notice it more at large when treating of the excernent system, which will be found to embrace both the absorbent and secretory vessels. It should be remarked, however, that, in M. Magendie's hypothesis, the veins, and not the lymphatics, are the absorbents of the body *.

I. Machinery of the sanguineous system.

Arteries generally terminate in veins:

Many of them in exhalants:

others perhaps in lymphatics.

Omitting then for the present the consideration of the lymphatics, the machinery, by which the circulation of the blood is principally effected, consists of the heart itself, the arteries, and the veins.

Instruments of the sanguiferous machinery.

The heart in the more perfect classes of animals, as mammals, birds, and most, though not all, amphibials, is a very compound organ; for in all these the blood, when received from the veins, is first sent from this central organ to the lungs to be duly aerated, or, according to Mr. Ellis's hypothesis, to be unloaded of its excess of carbon, and is afterwards returned from the lungs to the same organ before its general circulation over the system commences. These classes, therefore, are said to possess a double circulation. And as the heart itself consists of

Heart in the more perfect classes of animals.

* Précis Elémentaire de Physiologie, tom. ii.

I. Machinery of the sanguineous system. Heart double, and circulation double.

four cavities, a pair, composing what is called an auricle and a ventricle, belonging to each of the two circulations; and as each of these pairs is divided from the other by a partition, these classes are also said to have not only a double circulation, but a double heart; a pulmonary and corporeal circulation, and a pulmonary and corporeal heart.

[The division of the circulation into two parts, the *great, aortic, systemic,* or *corporeal,* and the *less,* or *pulmonary* one, has generally been adopted since the time of the illustrious Harvey. Bichat conceived, however, that a division, founded on another principle, was preferable for the purpose of illustrating the objects of the blood's motion. The blood in one portion of its course is remarkable for its bright scarlet hue; in another, for its dark colour. In the first, it is flowing from the lungs to all parts of the body; in the second, it is returning from these parts to the lungs. The first is Bichat's *circulation of red blood;* the second, his *circulation of black blood**; a distinction that at once gives a prompt introduction to the knowledge of the purposes of the circulation.]

Circulations of red and black blood.

Seat and appendages of the heart.

The heart, in which the chief impelling power of the two vascular systems resides, is situated in the chest, between the lungs, and upon the diaphragm, by all the motions of which it is influenced. [The texture of the heart is fleshy, but very dense and compact, consisting of packets of fibres, more or less oblique, and variously contorted. The lesser ventricle, which has to propel the blood to a much greater distance than the right, is more fleshy and strong than the latter, which has merely to send the blood through the lesser or pulmonary circulation. When the chest and pericardium are opened in a living animal, the heart may be seen beating; the action of the auricles and ventricles alternating; that is to say, the two auricles contract together, and then the two ventricles. When the stethoscope is applied to the region of the heart, the distinct sounds of the action of the ventricles and auricles may be heard. At the instant when the pulse is perceptible in the arteries, a dull sound is audible,

* Bichat, Anat. Gén. tom. ii.

and directly afterwards a clearer sound, similar to the noise of a valve. The former arises from the action of the ventricles; the latter from that of the auricles*. I. Machinery of the sanguineous system.

The blood is returned from the greater circulation by the two large venæ cavæ into the right auricle. At the same moment, it is poured into the left auricle from the pulmonary circulation by the four pulmonary veins. The auricles, being thus filled with blood, contract, when the blood, partly thrown back into the veins, produces, by its reflux from the right auricle, a pulse, sometimes visible in the internal jugular veins of thin persons†, but the main part of it is propelled into the right ventricle. The auricles then become relaxed, and the ventricles act, and drive back into the auricles such blood as happens to be situated behind the tricuspid and mitral valves, the valves placed at the communications between the auricles and ventricles, while the rest is thrown by the right ventricle into the pulmonary artery, and by the left into the aorta. All regurgitation from these two great trunks is now impeded by the operation of the semilunar valves, placed at their commencement.]

The heart is loosely surrounded by a dense and fibrous membrane, named, from its situation, pericardium, possessing little sensibility, closely connected with the diaphragm, and reflected over the heart and its large vessels. Physiologists commonly represent its use to be that of confining the heart in its proper post; and of lubricating it, in its state of unceasing activity, with a peculiar fluid, denominated liquor pericardii, secreted from the capillary arteries of its internal surface. In a state of health, this fluid is small in quantity and of a reddish hue, some portion of the red parts of the blood being intermixed with it; but, in a morbid state of the membrane, it is apt to accumulate, change its properties, and lay a foundation for various complaints‡. Pericardium.

[With respect to the considerable effect imputed to the pericardium in regulating the motions of the heart, and preventing this organ from *leaping* out of its place, as the Heart not much confined by the pericardium.

* See Laennec, Traité de l'Auscultation, &c. tom. ii. p. 403. 2d edit.

† See Magendie's Physiology by Milligan, p. 360; and Mayo's Outlines, p. 67.

‡ See Bostock's Elementary System of Physiology, vol. i. p. 363. 8vo. 1824.

I. Machinery of the sanguineous system.

expression is, one or two facts, brought to light by dissection, have materially weakened, if not quite subverted the hypothesis. A few instances have occurred of the heart being found without any pericardium whatever, or any device to answer its purpose. Dr. Baillie has recorded a singular instance of this in a man, aged about forty, who died of an accidental complaint, without seeming to have suffered from the deficiency*. Many examples are met with, where the bag of the pericardium and its reflected layer on the heart are completely adherent together, without any particular effect on the action of the latter viscus. A similar case to that in Dr. Baillie's works, is reported by M. Littre†. The circumstances which have most influence in fixing this organ are, its situation between the two lungs, which enclose it nearly on every side; and its connexion with the large blood vessels.

When, as an able physiologist has observed, we take into consideration the relative importance of the heart and brain, as far as regards mere animal existence, we shall be led to decide in favour of the former. In incubation, as the immortal Harvey pointed out, a beating point, a "punctum saliens," as he expresses it, which is the rudiment of the future heart, precedes the formation of other parts of the body, and is visible for some time before any trace of the brain can be distinguished. Acephalous fœtuses have been known to attain their full size in the womb, and even to have lived for a short time after birth, and then died from not being able to effect those changes, which are incidentally necessary to an existence of any duration. For example, a regular supply of nutritious matter is essential to the support of life; this can only be supplied by the introduction of food into the stomach by the act of deglutition; but this act, at least in the higher animals, cannot be performed without the intervention of the nervous system‡.

Structure of arteries.

The sides of arteries are divisible into several strata of dissimilar substances, technically named *coats* or *tunics*. Mascagni, like the older anatomists, who preceded him,

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* See Baillie's Works, by Wardrop, vol. i. p. 44.

† Hist. de l'Acad. des Sciences, 1712; p. 37.

‡ See Bostock's Physiology, vol. i. p. 336.

represents both the arteries and veins as having four coats*; but, his external one (ascitizia) is merely the cellular membrane that connects the vessels to the adjoining parts†. According to Rudolphi, and the generality of modern anatomists, all vessels have at least two coats, and the arteries three. Some writers indeed reckon only two proper arterial coats, and describe every arterial tube, exceeding one line in diameter, as visibly composed of one adventitious and two essential substances‡. The three arterial coats are now generally called *external, middle,* and *internal;* denominations adopted by Dr. Jones in his excellent work on hemorrhage; or *elastic, muscular,* and *membranous.* By Bichat, the latter tunic was styled the *common membrane of the system of red blood,* as it is not restricted to the arteries, but extends over the surface of the left ventricle and auricle of the heart, and lines the pulmonary veins, and, in short, the whole track of the scarlet blood.

I. Machinery of the sanguineous system.

In examining arteries, one of the first things observable is, that the sides of the large arteries are thick and elastic, so that, when these vessels are transversely divided, the section presents a regularly circular aperture §. Elasticity is rather obscure in the greater number of the textures of the animal body, a more prevalent feature of which is softness; yet it is very conspicuous in the arteries, and one thing that particularly marks their difference from veins, keeping their sides apart, even when they are empty. In fact, the arteries and some cartilaginous passages, like the wind-pipe, and the meatus auditorius of the fœtus, are the only tubes which are sufficiently elastic to remain open of themselves. It is to the elasticity of the arterial parietes that must be ascribed the sudden return of their naturally pervious condition, after their cavity has been momentarily effaced by compression, and the quickness with which an artery that has been bent straightens itself again. According to Bichat, this property is also manifestly concerned in the sort of locomotion, which

Great elasticity of arteries.

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* Prodromo, p. 61—64.
† K. A. Rudolphi, Elem. of Physiol. vol. i. p. 90.
‡ See Edinb. Med. Journ. vol. xviii. p. 258.
§ Haller, Elem. Physiol. tom. i. p. 37.

I. Machinery of the sanguineous system.

the arteries undergo from the influx of blood into them. If a tortuous arterial trunk be exposed in a living animal, the whole of it will be seen to rise up at each pulsation, quit its place, and straighten itself. As soon as an anatomical injection is thrown into a very thin, diminutive subject, a locomotion of all the tortuous branches of the face becomes perceptible through the integuments. If the arteries had not a firm, elastic texture, they could not thus yield to the impulse communicated to them. The abdominal branches of the vena portæ, having no valves, may be injected like the arteries; but nothing, resembling the above locomotion, is observable when the fluid is impelled into them. Bichat frequently made arterial blood circulate in veins by means of curved pipes adapted to the vessels of a living animal; for instance, to the carotid and external jugular vein; yet, though a kind of pulsation, synchronous with that of the heart,—an evident rustling,—could be felt in the veins, thus injected with arterial blood, no real locomotion was discernible*.

Internal coat of arteries.

The *internal coat* of the arteries, though extremely thin, and even semi-transparent, is very close in its texture, endued with little elasticity†, and gives to those vessels their smooth polished lining. It does not exhibit the dun yellow colour of the middle coat; nor has it any fibrous appearance, being every where perfectly level and slippery‡. According to the experiments of Dr. Jones, it is elastic and firm *in the longitudinal direction;* but so *weak in the circular,* as to be very easily torn by a force applied in that direction§. In the dead body, Bichat noticed, that it seemed to have an unctuous fluid upon it, which, if it be present in the living subject, a circumstance which he doubted, must be produced by the exhalants of the vasa vasorum. It is of folds of the internal coat of the arteries, that the semilunar and sigmoid valves are formed at the origins of the aorta and pulmonary artery, the important uses of which valves have been already cursorily stated. The same membrane also forms the various ridges at

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* Bichat, Anat. Gén. tom. i. p. 289. † Hunter on the Blood, p. 117.

‡ Soemmerring, De Corporis Humani Fabricâ, tom. v. p. 57.

§ On the Process of Nature in suppressing Hemorrhage, &c. 8vo. Lond. 1805.

the commencement of the arterial branches. It is very feebly united to the middle coat; and, according to Bichat, there is no cellular tissue between them. The morbid changes, to which it is subject, prove its vascularity. Indeed, during life, it is particularly connected with arterial diseases. Thus its inner surface becomes the seat of adhesive inflammation, whenever the blood is prevented by a ligature from passing along it, or the opposite sides of the vessel are gently held in contact for a certain period. In elderly persons, it is also noted for its singular tendency to ossify. Bichat calculated, that, in every ten individuals past their sixtieth year, the arteries of at least seven have earthy incrustations on them. These ossifications, which never affect the middle coat, always begin upon the external surface of the inner coat, being lined by a thin pellicle, which intervenes between them and the circulating blood, and is plainly the internal coat itself. These calcareous depositories in the arteries are not regulated by the laws of common ossification, the cartilaginous state rarely preceding them. The earthy matter is always deposited in detached plates, or scales, and the whole artery is seldom converted into one continued solid tube. Thus the portions of the internal coat, between the scales, was considered by Bichat as so many articular bands; the arteries thus ossified being composed of numerous pieces, moveable upon each other, and capable, in a certain degree, of yielding to the impulse of the circulation. While these earthy plates continue thin, the inside of the artery retains its natural smoothness; but, when they acquire thickness, they project into the cavity of the vessel; the thin pellicle breaks at their circumference; and they then adhere merely to the fibrous coat.

I. Machinery of the sanguineous system.

Ossification of arteries.

The *middle coat*, which is the thickest, consists of several layers of firm, compact fibres, considered by Hunter, Jones, and most physiologists, as *fleshy* or *muscular*. It is sometimes called the *fibrous coat*, and often the *muscular*. Bichat names it *the proper membrane of an artery*, and observes, that it is very apparent in the large arteries, but less perceptible in their ramifications, where it is gradually lost*.

Middle coat of arteries.

* Anat. Génér. tom. i. p. 270.

I. Machinery of the sanguineous system.

Its fibres have a circular direction; being, however, rather obliquely connected, and interlaced with each other, than complete circles. According to Jones, they are of a peculiar nature, well supplied with nerves, and in form and disposition like muscular fibres, but different from them in possessing a remarkable degree of elasticity. They also differ from muscular fibres in being of a yellowish dun colour; in not having the same taste when boiled*; and in having no fibrine as one of their constituent parts. With respect to the colour of muscular fibres, a red colour is peculiar only to those of vertebrated animals, and, even in amphibia, they appear very pale, and, in numerous fishes, still paler. Many of the lower animals, as, for instance, the actiniæ, possess a manifest power of contraction; yet, as Dr. Bostock observes, their substance is quite as unlike that of the muscles of warm-blooded animals, as the transverse fibres of the arteries are alleged to be†. The non-muscularity of the middle coat of an artery, therefore, must not be inferred from the mere circumstance of its not corresponding in colour to the muscles of the human body.

Whether it is muscular?

Such physiologists as consider the middle coat of the arteries to be muscular, amongst whom are Haller, Walther, Hunter, and Soemmerring, build their opinions upon various grounds, some of the firmest of which were explored by Mr. Hunter. It is also argued, that the fibres become soft and greyish in the small arteries, and assume much of the appearance of those in the intestines; that, notwithstanding the dryness, resistance, elasticity, and fragility of the arterial fibres, not more difference really exists between them and the muscular fibres, than between those of different muscles; and that the muscularity of arteries is proved by their functions. With such statements Béclard joins another, which is a direct contradiction to Berzelius; namely, that he has detected a proportion of fibrine in the middle coat of the arteries‡.

Dr. Jones represents the elasticity of an artery as so

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* Rudolphi's Elements, vol. i. p. 80; J. J. Berzelius, Animal Chemistry, p. 25.

† Elem. Syst. of Physiol. vol. i. p. 399.

‡ Béclard, Additions à l'Anat. Gén. p. 78.

particularly inherent in the middle coat, that, if this coat were separated from the two others, it would retain its cylindrical form, while they would collapse. This statement is certainly not applicable to the largest arteries, the outer coat of which possesses very considerable elasticity, and perhaps even a greater degree of it than the middle one. I. Machinery of the sanguineous system.

The *external coat* of the arteries is often described as condensed cellular membrane. Its texture towards the middle coat is close and smooth; but, more externally, it is open and rough, in consequence of the cellular substance by which it is connected to an additional covering, named the arterial sheath. The external coat is remarkable for its density, whiteness, and great elasticity. If an artery be surrounded with a tight ligature, the middle and internal coats will be completely divided, while the external coat will remain entire. Hence, the strength of an artery must depend in a great measure upon this coat, and its importance may be conceived from the fact, that it encloses and transmits the vasa vasorum, by which the artery itself is nourished. External coat of arteries.

The sheath of arteries is merely the lamellated cellular substance that forms around them a sort of canal. On one side it is connected to their external coat by numerous filaments of cellular membrane; while, on the other, it is continuous with the common cellular substance. It does not exist where arteries are covered by serous membranes. Other arteries are likewise destitute of it, apparently in consequence of there being no cellular membrane in their vicinity, as in the brain. In the limbs, it is generally very compact; but, in some other situations, it is quite lax, as around the spermatic arteries *. Cellular sheath of arteries.

According to Bichat, although the cellular tissue forms the external coat of the arteries, and serves for the insertion of the arterial fibres, it is not continued into their interstices; a peculiarity, he says, in which the arterial tissue differs from that of muscles, veins, &c. This absence of cellular tissue he also remarked between the middle and internal coats; though the observation dis- Little or no cellular substance in arteries.

* See Béclard, Additions à l'Anat. Gén. p. 79.

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agrees with the statements of Haller, Soemmerring, and others. It is to the want of cellular substance in the proper arterial tissue, that Bichat refers a great deal of the fragility by which it is characterized; the difficulty of arterial dilatations; the freedom of arteries from fat, anasarca, hydatids, cysts, and various tumours, to which the cellular membrane is liable*.

Vasa vasorum.

Arteries are furnished with minute arteries and veins of their own, technically named *vasa vasorum*, and without the agency of which the nutrition, growth, and morbid states of the arterial system would defy all rational explanation. These small nutrient arteries originate from the neighbouring ramifications, and not from the artery itself, to which they are distributed. One exception to this arrangement is pointed out by Bichat: the aorta at its commencement gives off the coronary arteries, which, besides supplying the heart, ramify on that great vessel.

Absorbents of arteries.

Absorbent vessels are very manifest around the large arteries, for instance, the crural. The enlargement of the cavities of arteries, as the body, limbs, and other parts increase in size, implies the continual performance of absorption in the arterial structure. Other powerful arguments, in support of this inference, may be drawn from various pathological facts, especially from the liability of arteries to ulceration.

Nerves.

According to Soemmerring†, all the arteries have nerves, which also appear to him to be smaller and fewer in the large trunks, than in the branches of middling diameter. Hence, he concludes, that the more minute arteries are, the greater is their proportion of nerve, in relation to their size. He states, that the vertebral artery, and the large mesenteric branches in thin subjects, can be seen, without any difficult preparation, surrounded by a beautiful network of nerves. Lucae asserts, that he has followed the nerves even into the substance of arteries. The late Mr. Wilson also succceded in tracing filaments of nerves into the arterial coats. "I can have no doubt," he remarks, of nervous filaments communicating with the packets of

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* See Anat. Gén. tom. i. p. 285—287.

† De Corporis Humani Fabricâ, tom. v. p. 59.

muscular fibres, as there is sufficient proof in the action of blushing, that these fibres are much influenced by emotions of the mind*." In an experiment made by Sir Everard Home, the great sympathetic nerve was irritated in the necks of dogs and rabbits, and a temporary increase of pulsation is said to have been thereby produced in the carotid arteries†. In experiments of this kind, the physiologist should be careful not to confound the general disturbance of the circulation from the pain and agitation, with a local augmentation of the pulse of a particular artery from the effect of the irritation of the nerve, or nerves, by which it is supposed to be influenced.

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The veins are membranous tubes, like the arteries, but differ from these vessels in having a thinner and less fibrous texture, and in being often furnished with valves, which, in the arterial system, are nowhere found, except at the roots of the aorta and pulmonary artery. The veins are nearly destitute of that texture which is seen in the middle coat of the arteries, and are consequently to be regarded as little more than simply elastic tubes. As Soemmerring remarks, it is only in the large trunks of the veins that any fibrous appearance can be traced‡. Their office is to return the blood to the heart, after it has served the purposes for which it was sent from the two ventricles of that organ. Their action is therefore entirely mechanical, and the blood is transmitted by them (as far at least as they themselves are concerned) upon hydraulic principles§. That the large veins have longitudinal fibres is generally admitted; but the transverse or circular ones, ascribed to them by Marx‖, seem to Professor Rudolphi to be nothing more than cellular membrane. He has never seen distinct circular fibres in the veins of the human subject, nor even a single one in the vena cava of a horse¶. The force, with which the veins resist any power tending to tear them, is much greater than might be expected from their apparent tenacity. Their area is much larger in proportion to their

Structure of veins.

Have no circular fibres.

* On the Vascular System, p. 155.
† Phil. Trans. 1814.
‡ De Corp. Hum. Fabricâ, vol. v. p. 328.
§ See Bostock's Elem. Syst. of Physiol. vol. ii. 403.
‖ Diatribe de Structurâ atque Vitâ Venarum. Carlsr. 1819.
¶ Elem. of Physiol. vol. i. p. 90.

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sides than that of the arteries; and, according to the experiments and calculations of Wintringham, the proportion, which the thickness of the arterial coats bears to that of the venous tunics, is in the largest trunks as fifteen to one.

Their thickness and strength as compared with arteries.

The veins also bear greater distention than the arteries without bursting, In Wintringham's experiments, the vena cava inferior sustained a column of water weighing 176lb., while the aorta in the same situation was burst by a column of 158lb. 11oz. The iliac vein was to the artery in this respect, as 1034 to 1000. But, in the vessels of the viscera, the arteries exceeded the veins, and, in the aorta of an old dog, the aorta was stronger than the vena cava. In the living subject, however, the veins are found more liable to dilatation and rupture, than the arteries. They yield more readily, and admit of greater dilatation. The inner coat or lining of the veins is thinner, more dilatable, and less brittle than that of the arteries. Ossification never takes place in it; and as all what Bichat calls the *common* membrane of the black blood is of the same nature, the tricuspidal valve, with the semilunar or sigmoid valve of the pulmonary artery, and the lining of that vessel, never exhibit bony deposits, which are so common in the corresponding parts of the system of red blood.

Their lining never ossifies.

Their valves.

The valves of the veins are produced by folds of the internal coat. In the larger trunks they are generally arranged in pairs, as at the entrance of the internal jugular into the subclavian, in the large veins of the leg and arm, and the vena azygos. Three valves situated together are sometimes observed, but not frequently. Solitary valves are frequently seen in the smaller veins. The size of the valves is proportioned to that of the vessel, but they are not always large enough to close it completely. The valves are chiefly found in veins which have a perpendicular position, as in the limbs, penis, testicle, neck, and the vena azygos. They are particularly numerous in the limbs and cutaneous veins, and very scarce in the viscera.

Certain veins without valves.

There are no valves from the right auricle down to the iliac veins; none in the hepatic, renal, uterine, umbilical, cerebral, or coronary veins, excepting the single one at the mouth of the coronary in the auricle itself. According to Haller, there are none in the small veins generally, the diameter of which is less than one line. The valves begin

in the iliac veins, where however they are not numerous; and they are found in such branches of the hypogastric veins as do not come from the uterus and bladder. The effect of the valves in compelling the blood to run in one direction in the veins is manifest. They lie close to the side of the vessel, and make no resistance to the blood's natural course; but, when that fluid is repelled in the vein, it lifts up the loose edge, and causes the margins of the two valves to form a partition in the cavity of the vessel. Hence the blood cannot retreat further than the situation of the first pair of valves; consequently, any portion of a venous trunk has to sustain only the quantity of blood contained between the two valves which bound it. Had it not been for this arrangement, the whole column of venous blood, when its return to the auricle was impeded, would have pressed on the minute veins with a degree of force which the coats of these vessels could not have resisted. The necessity of such a structure arises out of the comparatively slow motion of the venous blood, the absence of an impelling agent at the commencement of the venous circulation, and the degree in which it is influenced by the force of gravitation. In consequence of the valves, all pressure must have the effect of sending the blood on towards the heart. For the same reason, the swell of the muscles, when they act, must promote the venous circulation.

I. Machinery of the sanguineous system. Use of the valves.

The coats of veins are furnished with minute arteries and veins, not essentially different from the nutrient vessels of the arteries. Their exhalants and absorbents are calculated to be few; and their supply of nerves much inferior to what the arteries possess.

Nutrient vessels and nerves of veins.

The following are some of the considerations which led Mr. Hunter to believe the arteries muscular, as well as elastic. When the inside of the arteries and veins of the alligator and turtle is inspected, he says, fasciculi of muscular fibres can be plainly seen*. But, in order to prove the point, he had recourse to experiments, in which he contrasted the action of the arteries with that of simple elastic substances. "Action in an elastic body," he observes,

Hunter's arguments in proof of the muscularity of arteries.

* On the Blood, p. 118.

I. Machinery of the sanguineous system.

" can only be produced by a mechanical power; but muscles, acting upon another principle, can act quickly or slowly, much or little, according to the stimulus applied; though all muscles do not act alike in this respect. If an artery is cut through, or laid bare, it will be found that it contracts by degrees, till its whole cavity is closed; but, if it be allowed to remain in this contracted state till after the death of the animal, and be then dilated beyond the state of rest of elastic substances, it will only contract to the degree of that state. This it will do immediately; but *the contraction will not be equal to that of which it was capable while alive.*

" The posterior tibial artery of a dog being laid bare, and its size attended to, it was observed to be so much contracted in a short time, as almost to prevent the blood from passing through it, and, when divided, the blood only oozed from the orifice.

" On laying bare the carotid and crural arteries, and observing what took place in them, while the animal was allowed to bleed to death, these arteries very evidently became smaller and smaller.

"When the various uses of the arteries are considered; such as their forming different parts of the body from the blood; their performing the different secretions; their allowing at one time the blood to pass readily into the smaller branches, as in blushing, and at another preventing it altogether, as in paleness from fear; and if to these circumstances we add the power of producing a diseased increase of any or of every part of the body; we cannot but conclude, that they are possessed of muscular powers."

Large arteries most elastic; small, most muscular.

Certain experiments, to which Mr. Hunter had recourse, led him to infer, that the large arteries are most elastic, and the small ones most muscular. He injected the uterus of a cow, after it had been separated from the animal more than twenty-four hours, and he allowed it to stand another day, at the end of which the larger vessels had become much more turgid than they were when first injected; and the smaller arteries, he says, had contracted so as to force the injection back into the larger. He regarded this as a proof, that the muscular power of the small arteries is superior to that of the large ones, and that they retain it longer after their detachment from the rest of the system.

The latter character is one that Mr. Hunter particularly ascribed to all the involuntary muscles, to which class the arterial fibres belong*.] I. Machinery of the sanguineous system.

Nothing can differ more widely than the relative spissitude and power ascribed to the elastic and muscular arterial coats, compared with each other in different parts of the circulating course. As the heart is the salient point of the circulation, and pours forth about two ounces of blood at every jet, the greatest force is exerted against the arteries that immediately issue from the heart. Here, therefore, we find the greatest resisting power; for, in the aorta and pulmonary artery, the elastic tunic is stronger than the muscular, by which contrivance these vessels are never too much dilated by the action of the heart in its contraction, or, as the Greeks call it, systole. In like manner, this tunic becomes stronger at the bending of the joints, and continues so through the whole length of the curve; and the same provision takes place at the sharp angles made by a trunk and its branch, or at an angle formed by the division of one trunk into two. As the arteries, however, recede from the heart, the blood, resisted at every step by the elastic tunic of the canal it flows through, progressively loses its impetus, and a less elastic power becomes necessary and is actually provided. At a considerable distance, therefore, from the heart, in whatever direction the arteries ramify, their muscular tunic soon balances their elastic, and gradually becomes superior; till at length, in the capillary arteries, it is nearly, if not altogether, the only tunic of which the canal consists: whence the ease, with which these vessels collapse on some occasions, as loss of blood, or the exercise of terror, or any other depressing passion; and the equal facility with which they open in other cases, as in the sudden blush of shame or modesty.

Arterial structure.

Skilful adjustment of the arterial and muscular tunics.

Cause of collapse on loss of blood.

Cause of blushing.

[Many of the phenomena, which Mr. Hunter and other distinguished physiologists refer to the muscularity of the arterial system, Bichat ascribes to a property which he terms contractility of tissue, that is to say, a property depending upon organization, and not upon life. He takes

Bichat's contractility of tissue.

* Op. cit. p. 115.

I. Machinery of the sanguineous system.

a view of such contractility as operating in the transverse and longitudinal directions. In the former it is much more strongly marked, than extensibility. He observes, that as soon as an artery ceases to be distended with blood, it evidently shrinks. Hence: 1. The conversion of the umbilical artery and ductus arteriosus, after birth, into ligamentous impervious substances. 2. The obliteration of an artery all the way from the place of a ligature to the point at which the first collateral branch goes off. 3. The diminution of the calibre of an artery between two ligatures, as soon as the blood between them is discharged by a puncture. 4. In experiments upon dogs, into which blood was transfused, with the view of causing an artificial plethora, Bichat found that the diameter of the arteries was nearly double what it was in dogs of the same size, after profuse hemorrhage. The same difference, he says, may be noticed in two animals of equal size, when one has been killed by hemorrhage and the other by asphyxia. 5. These experiments left no doubt in Bichat's mind of the fulness and smallness of the pulse, an artery being really more or less bulky according to the quantity of blood which it contains*. There is a limit, however, beyond which the vessel cannot be extended; but, from a deficiency of blood, it may contract to such a degree as to represent as it were but a thread.

Different degree of contraction in different arteries.

Mr. Hunter calculated the degree of contraction that takes place in the different arteries of an animal bled to death. He subjected to very careful admeasurement the arteries of a horse killed in this manner, and whose muscles had all been allowed to contract equally, whence "we might reasonably presume that the vessels, at least such of them as were furnished with muscles, would also be contracted, the stimulus of death acting equally upon muscles in every form and every situation." He removed from the carcase sections of the aorta, iliac, axillary, carotid, crural, humeral, and radial arteries, with the precaution of not altering in the least their texture, or state of contraction. He measured them when slit open, so as to learn their greatest degree of contraction. He then stretched

* See also Hunter, op. cit. p. 124.

them transversely, and measured them when elongated as much as possible. Lastly, he measured them a third time, in the state to which they recovered by their own powers. He found that the power of recovering was greatest near the heart, and gradually diminished towards the extremities of the body. This was owing, as Mr. Hunter supposed, to the extension having entirely destroyed the power of muscular contraction, which is comparatively greatest in the small arteries, while the degree of contraction, which actually took place after such extension, proceeded from elasticity, which is most abundant in the larger trunks.

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Here what Mr. Hunter imputes partly to muscularity, and partly to elasticity, Bichat would refer to contractility of tissue. The latter is of opinion that most physiologists have confounded this kind of contractility in the arteries with irritability, the difference of which is shown by its always ceasing a few hours after death, whereas the contractility, spoken of by Bichat, takes place after death, though in a less marked degree.

Mr. Hunter, who, as we have seen, refers all contractility of the arteries to muscularity and elasticity, relates some experiments, the tendency of which is to prove that they have no muscular power of contraction in the longitudinal direction. In the first experiment, a longitudinal section of the aorta ascendens, measuring two inches, after having been stretched and allowed to contract again, measured the same length. The same thing was observed in portions of the carotid and humeral arteries. "These experiments," Mr. Hunter says, "appear to be decisive, and prove, that *the muscular power acts chiefly in the transverse direction;* yet, it is to be observed, that *the elastic power of arteries is greater in the longitudinal than the transverse direction.* This appears to be intended to counteract the lengthening effect of the heart, as well as that arising from the action of the muscular coat; for the transverse contraction of that coat lengthens the artery, and therefore stretches the elastic, which again contracts upon the diastole of the artery*."

Arteries have no muscular power in the longitudinal direction.

Their elasticity greatest in the longitudinal direction.

Many of Mr. Hunter's observations embrace the sub-

* Hunter on the Blood, p. 128.

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jects of the vital properties of the arteries; as, for instance, whenever he reasons about the disputed question of their muscularity. Bichat, after considering the elasticity, extensibility, and contractility of tissue, or the properties, which he believed to depend on the structure or organization of arteries, offers some interesting reflections on their *vital properties*. First, he inquires, whether *animal sensibility* exists in them? The application of a ligature to an artery, he says, sometimes produces pain; but more frequently not. The latter statement the editor deems incorrect, or, at least, repugnant to what he has noticed in the practice of surgery. Nor can Bichat's observation be reconciled with what he presently says about the great sensibility of the inner coat of the arteries. However, as he admits, that they sometimes give pain when tied, this affirmative proof of their sensibility is all that can be required. He states, that, in whatever manner the carotid of a dog be irritated, whether with a scalpel, acids, alkalies, &c. the animal never betrays signs of pain. With regard to the inner coat, however, he found, that, although the injection of a mild fluid, like water, at the temperature of the animal, caused no uneasiness, the injection of a stimulating fluid like ink, diluted acids, wine, &c. excites very acute pain *.

Are arteries endued with sensibility?

Animal contractility.

*Animal contractility*, as Bichat terms it, or (as it might be expressed) contractility under the influence of the brain, and resembling that of the voluntary muscles, is stated by this author not to belong to the arteries. Such contractility, he asserts, could only depend upon a connexion between these vessels and the brain; yet irritation of this organ, producing convulsions of parts subject to the will, has no effect upon the arteries; and opium, which, in a certain dose, paralyzes those parts, leaves the vessels unaffected. Another assertion made by Bichat, is, that if the spinal marrow be exposed, irritated, and compressed, the action of the arteries is neither increased, nor diminished, even though the voluntary muscles be at the same time convulsed or paralyzed from it. On the other hand, the experiments of Dr. Philip contradict Bichat on this

* Anat. Gén. tom. i. p. 295.

interesting point, and show, that the motion of the blood in the capillaries is influenced by stimulants, applied to the central parts of the nervous system; which circumstance, if established as a fact, must depend upon the contractile power of those vessels *. In direct opposition to the result of Sir Everard Home's experiment, already mentioned, Bichat found the arteries to be quite unaffected, either by irritation of the cerebral nerves, which accompany them, or by that of the ganglionic nerves, which are irregularly and abundantly distributed upon their external surface. He even tried galvanism without any effect. I. Machinery of the sanguineous system.

The same physiologist represents the arterial system as destitute of what he calls *organic sensible contractility*, or that kind of contractility, which, in his system, is classed as one of the properties of organic life, and illustrated in the action of the heart, intestines, &c. In whatever manner an artery be irritated in the living body, he asserts that it constantly remains motionless. Even when the arterial coats are stripped off layer by layer, either in a living animal, or one recently killed, none of that trembling and palpitation is perceived, which occur in the fibres of organic muscles under similar circumstances. The conclusion, to which Bichat's experiments lead him, is, that during life *the arteries have no contraction that is under the vital influence*, and he refers all the circumstances, usually brought forward to prove the contrary, to contractility of tissue. Thus, he observes, when an artery is tied at two points, and opened in the interspace, it empties itself of the blood contained in it, as well as of any other fluid accidentally placed in it. The same thing also occurs, when only one ligature is so applied, that it intercepts the influence of the heart. The dependence of these circumstances upon contractility of tissue, he argues, is so much the fact, that, as long as the artery is free from putridity, they take place in the dead subject. If an artery be filled, and then opened, it empties itself by contracting. The contraction, produced by defect of extension, is what Bichat regarded as a test of contractility of tissue; irrita- Organic sensible contractility.

* Exp. Inquiries, &c. p. 291, 292. 2d edit.

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bility, or organic sensible contractility, always implies the operation of a stimulus.

Organic insensible contractility.

Bichat describes *organic insensible contractility*, or *tonicity*, as plainly existing in arteries. In those, which pulsate, he says, it is restricted to the purposes of nutrition; but, as soon as the influence of the heart on the motion of the blood ceases, which (according to his theory) is probably at the beginning of the capillary system, then the organic insensible contractility begins to have effect, not only upon the nutrition of the coats of the vessels, but also upon the circulation within them. Indeed, in this physiologist's views, the circulation in the small vessels is altogether maintained by their tonic power, the heart having absolutely no concern with it.

Bichat represents the arteries as endued with *organic sensibility*, which he says is never separated from the organic insensible contractility. In the large trunks, however, where it is only necessary for their nutrition, it prevails only in a very obscure degree. It is by the organic insensible contractility, and the organic sensibility, that Bichat would solve many of the difficulties attending the comprehension of the process of secretion. What Mr. Hunter and numerous modern physiologists would ascribe to the action of vessels, Bichat refers to those two rather imaginary properties of the minute arteries. The difference seems to the editor, after all, to consist rather in words, than meaning.

Let us now conclude this interesting topic with a summary of the principal arguments, respecting the muscularity of arteries:

Muscularity of arteries.

1. When arteries are stimulated in living animals with a sharp instrument*, strong acids†, or electricity‡, the portion of the vessels so stimulated is declared by the subjoined experimenters to contract. On the other hand, the contraction of an artery on its being pricked, variously stimulated, or even galvanized, is positively denied by Bichat, who ascribes the change produced by acids to a kind of

* Verschuir, De Arter. et Venarum Vi Irritabili, p. 17.

† Zimmermann, De Irritabilitate, p. 24. Larry, in Vandermonde's Journ. t. vi. p. 7; Verschuir, op. cit. p. 19.

‡ Birker, De Nat. Hum. Lugd. Bat. p. 45.

crispation, attended with chemical injury of structure, whereby the vessel is for ever prevented from resuming its pristine diameter, which it would do, if the contraction depended on mere stimulation. But, in opposition to him, we have again the galvanic experiments of Giulio and Rossi, and that of Sir E. Home, who, as we have noticed, produced violent throbbing in the carotid by applying alkali to the great sympathetic nerve.

I. Machinery of the sanguineous system. Muscularity of arteries.

2. Arteries are said to be capable of a peristaltic motion. The editor is not acquainted with the facts on which Soemmerring* founds this statement; unless it refers to Dr. Whytt's exploded hypothesis of an oscillation in the minute vessels.

3. The doctrine of the contractile power of the capillaries has received important corroboration from the experiments of Drs. Philip, Thomson, and Hastings. These gentlemen placed the web of a frog's foot in the microscope, and distinctly saw the capillaries contract upon the application of such stimulants as cause the contraction of the muscular fibre. Dr. Hastings found, also, the large arterial trunks, and even the veins contract, as Verschuir and others had previously noticed. Dr. Thomson has seen the arteries contract in such a degree, on the application of ammonia, that their cavity appeared to be quite effaced. On the contrary, the muriate of soda always caused a dilatation of them†.

4. Arteries are alleged to pulsate very differently in different parts. With reference to strength and fulness of the vessels, the editor's own observations enable him to corroborate this fact; but he has never known an artery of one part of the body beat more slowly, or quickly, than the rest of the arterial system. The occurrence, however, is mentioned by writers as a fact. An increased flow of blood to any particular organ, whether in health or disease, is inexplicable, unless some change in the diameter, or action, of the vessels supplying it, be taken into the account.

5. In one case upon record, the pulse of the arteries of

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* De Corp. Hum. Fabricâ, tom. v. p. 66.

† See Lect. on Inflammation.

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a paralytic arm was quite indistinguishable; while, in the other arm, it was full and strong*. Here it is argued, that, if the pulse had depended upon the heart alone, it would have been as strong in the paralytic, as in the healthy limb. Some highly instructive examples of the entire want of pulsation in the arteries of paralytic limbs are recorded by Dr. Storer†, by whom, however, this effect is described as exceedingly uncommon.

6. Another argument is derived from the operation of local stimulants in producing inflammation. The lachrymal gland, when the eyes are irritated, or when it is itself affected through the mind, pours forth tears. The saliva is more copiously secreted from the effect of stimulating medicines, or of the sight and smell of victuals.

Muscularity of arteries.

7. It is argued also, that, as the nerves of arteries are quite evident and abundant, these vessels must be connected with the brain, and be influenced by affections of the nervous system. Putting out of the present consideration the results of experiments, in which the effect of stimulating the nerves of arteries was examined, and about which the flattest contradictions prevail, let us only recollect the quick action of blushing; the instantaneous paleness of fear; the influence of the mind over the secretions; and the sudden distention of the corpora cavernosa from mental causes; and we can scarcely fail to conclude, that the arteries are under the influence of the nervous system.

8. One important argument, in favour of the contractile power of the arteries, is derived from cases in which the circulation was carried on, although the heart was either wanting, defective in its structure, or more or less ossified. Examples of the first kind are recorded by Hewson‡ and Brodie§, and of the latter by A. Burns, and other writers. According to Mr. A. Burns, the left ventricle of the heart may be so ossified, that it can have no share in propelling the blood into the arteries. Yet the circulation is continued through all parts of the body. And, from what happens in cases of ossified arteries, he infers, no doubt

* Hoffmann von der Empfindlichkeit, &c. § 842.

† Trans. for Improvement of Med. Knowl. vol. iii. p. 448.

‡ Exp. Inq. vol. ii. p. 15.

§ Phil. Trans. 1809, p. 161.

with considerable exaggeration, that the circulation can be much better conducted without the action of the ventricles, than without the reaction of the arteries. The cases of ossified heart reported by Mr. A. Burns are certainly highly interesting*. I. Machinery of the sanguineous system.

Drs. Philip and Hastings†, in their experiments, saw the circulation in the small vessels continue for some time after the heart was removed from the body; a circumstance hardly explicable without the admission of an action in the vessels themselves.

9. It is decidedly proved, that during life an artery can contract below its middling diameter, or that width to which its mere elasticity would reduce it. How can this be effected, but by muscularity?

10. Arteries, empty at the moment of death, and even contracted below their middling diameter, recover their ordinary size as soon as the vital influence is completely exhausted. Their muscular power is then annihilated, and their elasticity predominates‡.

From the tenor of all that has been said, the existence of a power of contraction in the minute vessels can hardly be doubted, whatever may be the opinion espoused respecting the muscularity of the arterial trunks. Some physiologists, not exactly agreeing with Mr. Hunter, may yet be disposed to consider the latter simply in the light of a mechanical, or hydraulic system, and the capillaries as the physiological, or vital organs§.

The wisdom, with which the structure of the body is contrived, is most convincingly exemplified in the vascular system. We have instances of it in the universal situation of the arterial trunks in the direction of the flexion of the joints, whereby they are hindered from being overstretched, and are protected from external injury; in their occasional tortuosities, by which they are enabled to adapt themselves to the continually changing positions of organs, without suffering from extension; and in their anastomoses, or frequent communications with one another, Protected situation, windings, and anastomoses of arteries.

* On Diseases of the Heart, p. 129, &c.

† Treatise on the Mucous Membrane, Introd. p. 51.

‡ See Experiments in Hunter on the Blood, p. 116, &c.

§ See Bostock's Physiology, vol. i. p. 403.

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by which the necessary supply of blood to parts is rendered secure, when any particular trunk is temporarily obstructed by pressure, or permanently obliterated by this and other causes.

Capillaries.

After having divided, and ramified to a considerable extent, and in a manner generally resembling the branching of a tree, the arteries, both of the greater and lesser circulations, terminate in the general capillary system. The exact point at which the arteries end, and the capillaries begin, cannot be demonstrated. According to Bichat, it is where the blood ceases to be at all under the influence of the heart, and the circulation is first maintained altogether by a contractile power of the minute vessels, to which he allots the mysterious term of insensible organic contractility. But, this imaginary limit would not satisfy many physiologists, particularly those who argue, that the action of the heart always extends its effect to the capillaries, as well as the arteries in general. Anatomists commonly describe the arteries as terminating in excretory tubes, exhalants, veins, &c.; but, in reality, the capillary system constantly intervenes between those vessels and the arteries. As already observed, while the large arteries are regarded by some physiologists as merely mechanical tubes, the minute ones, or capillaries, are represented as the part of the vascular system, in which all the important objects of the circulation are mainly prepared and accomplished, as nutrition, secretion, the oxydation of the blood, its decarbonization, &c.]

I have observed, that the force, with which the blood is at first projected from the heart, is progressively diminished by the resistance it encounters in the thick and powerfully elastic tunic of the trunks or large arteries into which it is immediately propelled. There are two other causes which co-operate in producing a progressively diminishing force. The first is the short angles against which the blood has to strike at the origin of all the different branches; and the next, and most important, is the larger diameter of the general mass of the arteries, compared with that of the heart or the arteries from which they immediately proceed; the range of the diameter augmenting in proportion to the increase of the ramifications.

From experiments, indeed, made by Mr. John Hunter on the carotids of camels and swans*, the very same arteries appear gradually to widen from the end nearest the heart to that most remote from it. From all which he concludes, that the aggregate diameter of the arterial system forms a cone whose apex is at the heart. And he concludes also, and most correctly, that this conic proportion is most obvious, increases most rapidly, and spreads with its broadest base in infants, or rather in the fetus; for here the main trunks of the arteries are extremely short, while the capillaries are very large, and, from the obliteration of many vessels in subsequent life, more numerous than at any other period. It is highly probable, indeed, that while the aorta in childhood is not a fourth part of the size of the same vessel in an adult, the aggregate of the capillaries of the former possesses a diameter more than four times as large as the aorta in the latter.

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Diameter of the arterial system, a cone.

Conic proportion varies in different ages.

We may hence, in some degree, account for the difference in the quickness of the pulse at different periods of life. In early infancy it beats as much as 140 strokes in a minute; towards the end of the second year it is reduced to 100; at puberty it is only 80; about virility 75; and after sixty years of age seldom more than 60 in a minute. For reasons connected with the preceding, it is more frequent in persons of short stature, those of strong passions of mind, those of great muscular exertion, and in females. From the increasing diameter of the blood-vessels as they diverge from the heart, the blood has a greater space for moving forward, and is able to move with more freedom; and hence one reason for the empty state in which the arteries are found immediately after death: a second reason is that the tunics of the veins, possessing little or no elasticity, readily dilate to the distentive power of the blood as it moves forward: a third, and indeed the principal reason, as sufficiently proved by Dr. Carson, is the natural elasticity or resilience of the lungs, which, by keeping them after death in a state of dilatation, allows the blood to accumulate here as in the vacuum. And hence, again, the reason of the accumulation of blood, which is usually

Why the pulse different in different ages.

Why the arteries are found empty after death.

Why blood is accumulated in the chest after death.

* On Blood, Inflammation, &c. Part I. Sect. VIII. p. 170.

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found in the chest after death, as well as the empty state of the vessels.

The above facts urged against the doctrine of circulation.

This vacuity of the arteries upon death was one of the objections, urged very forcibly by the ancients against the circulation of the blood, or even its following at all the course of the arteries; and which Dr. Harvey very unsatisfactorily replied to, by asserting, contrary indeed to fact, that the heart continues to contract for some time after death, and even after it has received blood: for it is generally found loaded with blood *.

Diameter of the aorta and pulmonary artery alike.

The pulmonary artery, which receives from the heart the blood returned into it from the veins, bears a very close proportion to the diameter of the aorta†, which sends the blood from the heart over the whole of the larger circulation. The aorta possesses more strength, but their elasticity is nearly equal, and the measure of each, on being slit, is about $3\frac{1}{8}$ inches: and hence there can be little doubt, that the quantity of blood sent back to the heart is on an exact balance with that which flows from it. It is not, however, at any time the identical blood, which is thus returned to the heart; for every organ takes from the general current, as it visits it, such parts and such principles as it stands in need of to support the wear and tear of its own action; while another considerable portion is thrown off, as we have already observed, in the form of secretions or exhalations from various emunctories that open externally or into internal cavities. But the drain, which is hereby produced on the arterial blood, is compensated by the various fluids collected from every part by the absorbent vessels, and by the flow of the chyle from the digestive organs; both which are poured into the thoracic duct, and finally intermixed with the returning current of venous blood a short time before it reaches the heart; and in this manner the balance of arterial and venous blood is maintained.

Balance of arterial and venous blood, how maintained.

Sum total of the blood estimated very differently.

With respect to the actual quantity of blood contained in the entire system, our means of determination are so

* See Dr. Carson "On the Vacuity of the Arteries after Death." Medico-Chir. Trans. vol. xi. part i.

† See Hunter on Blood, p. 133.

inexact, and consequently the calculations, or rather the conjectures, that have been offered upon the subject, are so strikingly discrepant, that it is not easy to reach a satisfactory conclusion. It is only necessary to state a few of the different opinions that have been offered, to show the absurdity of several of them. Muller and Abeildgaard estimate the weight, even in an adult, at very little more than eight pounds*; Borelli at 20; Planch at 28; Haller at 30; Dr. Young at 40†; Hamberger at 80; and Keil at 100. Blumenbach states the proportion in an adult healthy man to be as 1 to 5 of the entire weight of the body. Yet, little reliance can be placed on this last mode of determination, on account of the great diversity, in point of bulk and weight, of adults, whose aggregate quantity of blood is in all probability nearly alike. The mean numbers, as those of Baron Haller and Dr. Young, making the amount from 30lb. to 40lb. appear most reasonable; and perhaps fall not far short of the sum intended by Professor Blumenbach. The subject requires further examination, and a nicer estimate.

I. Machinery of the sanguineous system.

II. There is another question, which has also, in all ages, greatly occupied the attention of physiologists, but, upon which we still remain in a very considerable degree of indecision; and that is, the MOVING POWERS employed in the circulation; or, in other words, the projectile force, by which the blood is sent forward.

II. Moving powers of the sanguineous system.

The heart forms the salient point of motion, and with its systole or contraction the circulation commences. But what is it that excites the heart to contract? One of the most common answers to this question in the writings of physiologists is, the flow of the blood into the ventricles. But this is merely to argue in a circle; for the question still returns, what is it that makes the blood flow into the ventricles? Others have referred the cause to an immediate impulse from the brain. Now, in contractions of the voluntary muscles, there is no doubt of the existence of such an impulse, for we are conscious of it, and assent to it; but we are neither conscious of, nor assent to, any thing of the kind in respect to the contraction of the heart;

What excites the heart to contract.

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* Blumenb. Elem. Phys. p. iv. sect. 6. † Phil. Trans. 1809, p. 5.

II. Moving powers of the sanguineous system.

and are perfectly sure, that no such power of the will takes place during sleep. It is a mere assumption; and an assumption, which can only apply to a part of the great animal kingdom even during wakefulness; for, as it is only in mammals and birds that the nerves can be thus influenced in their passage to the heart, the postulate does not account for the contraction or dilatation of the heart in other classes of animals *.

Hunter's stimulus of necessity, what.

Mr. John Hunter ascribes this action of the heart, or rather the whole career of the circulation, of which he regards the action of the heart as a single and ordinary link in the general chain, to what he calls a stimulus of necessity: by which he seems to mean an instinctive power, dependent on the general sympathy of the system, which in every part is craving or demanding such an alteration; or, in other terms, is uneasy without it. His words are as follow: "The alternate contraction and relaxation of the heart constitutes a part of the circulation; and the whole takes place in consequence of the necessity, the constitution demanding it, and becoming the stimulus. It is rather, therefore, the want of repletion, which makes a negative impression on the constitution, which becomes the stimulus, than the immediate impression of something applied to the heart. This we see to be the case, wherever a constant supply or some kind of aid is wanted in consequence of some action. We have as regularly the stimulus for respiration, the moment one is finished an immediate demand taking place: and if prevented, as this action is under the influence of the will, the stimulus of want is increased. We have the stimulus of want of food which takes place regularly in health, and so it is with the circulation. The heart, we find, can rest one stroke, but the constitution feels it: even the mind and heart are thereby stimulated to action. The constant want in the constitution of this action in the heart, is as much as the constant action of the spring of a clock is to its pendulum, all insuring or depending on each other †."

Regarded as the primum mobile of the heart.

Mr. Hunter's "Treatise on the Blood" is a work of such sterling merit, so rich in its facts, and so valuable in

* Hunter on Blood, p. 145. † On Blood, p. 149.

its remarks, that, notwithstanding a few nice-spun and chimerical speculations that occasionally bewilder it, there is no book on physiology which a student ought to study more assiduously. Yet I am much afraid, that the language now read has no great deal of meaning in it; and that it does little more than tell us, that the heart contracts because it contracts, or, rather, that the circulation takes place because it takes place.

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Little meaning furnished by such an explanation.

Few physiologists indeed seem to have adopted this opinion: and hence a far more plausible and intelligible hypothesis has been since offered. This consists in supposing the heart to be stimulated by the oxygen of the blood introduced into it at the lungs by the process of respiration. Such was the favourite opinion of Dr. Darwin: and such appears to have been the opinion of Blumenbach, who was so fully persuaded of the oxygenized state of the blood when first received by the heart and poured into the arteries, that he expresses a desire of changing the terms *arterial* and *venous* blood for *oxygenized* and *carbonized*.

Oxygen received from the lungs regarded as the primum mobile.

That oxygen, if introduced into the blood, would stimulate the heart, there can be no doubt, from numerous experiments which prove, that a very small quantity of any foreign body whatever, even an ounce or two of solution of gum-arabic, infused into the blood by opening a vein, will not only stimulate the heart, but the stomach, intestinal canal, and other organs, with which the heart readily sympathizes*. [Whether the gum-arabic thus injected into the veins would stimulate the preceding viscera, requires proof; but various experiments of M. Magendie show, that it would produce death on another principle; namely, that of obstructing the capillary circulation in the lungs. The hypothesis of Darwin is refuted by the fact, that it would at all events only account for the contraction of the left cavities of the heart; since those of the right side, which perform their contractile functions perfectly well, receive blood, that has not undergone the oxygenating change of respiration. Mr. Brodie found in his experiments on rabbits, that the heart continued unaltered for at least two minutes after that viscus and the great blood-vessels were

* De Chirurgiâ Infusoriâ renovendâ. Aut. J. M. Regnaudot. 8vo. Lugd. Bat. 1779.

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empty of blood; and hence he concluded, that its action does not depend upon the presence of the blood in its cavities*. It should also be recollected, that if the contact of the blood were necessarily followed by the contraction of the heart, this organ would never be relaxed, because, though the quantity of that fluid undoubtedly varies at different moments in the auricles and ventricles, it is difficult to suppose, that they are ever free from it. Senac's doctrine, that the contraction of the heart is caused by the stimulus of the distention of the blood, is also one that cannot now be retained.]

By what power is the circulation maintained after it has once commenced?

Harvey's opinion.

But passing by, till this question is settled, the doctrine of the primum mobile, or first moving power, of the blood from the heart—by what means is the motion, thus mysteriously commenced, maintained afterwards through the whole circulatory course? Harvey replied to this question by asserting, that it is maintained by the action of the heart alone, which propels the blood equally through the entire length of the arteries and veins, both which he regarded as tubes alike inert, and in no respect contributing to the propulsive energy.

At first received with universal assent.

This dictum was at first received with universal assent; and the mechanical physiologists immediately set to work, in order to calculate the force with which the heart acts at every contraction, in the same manner as they had endeavoured to calculate the force of the stomach in the process of digestion. It is not necessary to enter into the details of these estimates. It is sufficient to observe, that,

But no common result arrived at.

from Michelot to Sauvages or Cheselden, they all differed from each other as widely as in calculating the quantity of blood in the system; and that, while Keil estimated the projectile power of the heart at eight ounces, Borelli fixed it at no less, than one hundred and eighty thousand pounds.

The heart itself not the sole propulsive power.

Proofs of this assertion.

There are various facts, however, (and several have been already mentioned in the course of this proem,) which sufficiently prove, that the heart cannot be the sole propulsive power through the entire range of the circulation. The two following are also much insisted upon: Firstly, that the pulse, if the systole of the heart were the only projectile

* See Cooke on Nervous Diseases, Introd. p. 61.

force, must take place, not SYNCHRONOUSLY all over the system, as it is well known to do, except in a few morbid cases in which local causes interfere, but SUBSEQUENTLY to the contraction of the heart, and SUCCESSIVELY through the whole line of the arterial tubes, in proportion as they lie more remote from the salient point. And, secondly, that whatever may be the projectile power of the heart, it must altogether cease with the arteries, and cannot reach the veins.

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And hence arose another hypothesis, which ascribed the propulsive power to a progressive *vis à tergo*, or a force communicated from the ventricles of the heart to the commencement of the arteries, producing a vibration or alternate dilatation and contraction of their tunics, through their whole length to the veins; and thus acting in conjunction with the projectile force of the heart itself.

Hypothesis of *vis à tergo*.

In proof of this auxiliary power afforded by the coats of the arteries, the phenomenon of pulsation was triumphantly appealed to; which, it was maintained, gave a direct and incontrovertible evidence, that an alternate dilatation and contraction, or enlargement and diminution, in the diameter of the arteries, is constantly taking place. This, by Bichat, is attributed solely to the locomotion of the arterial tubes, propagated to their terminal ramifications, and thence continued to the veins; but, by most modern physiologists, to a joint power, compounded of the action of the heart and the arteries.

Supposed proof derived from pulsation.

Bichat's explanation.

Bichat's doctrine has of late been incontrovertibly refuted by one or two very simple experiments of M. Magendie*. Besides which, however, it is now a well-ascertained fact, and one that has been thoroughly elucidated by Dr. Parry of Bath, that no increase of size, or indeed change of bulk of any kind takes place in arteries, during either the systole or diastole of the heart's ventricles in a state of health†. The arteries of animals, to ascertain this point, have been exposed in different parts, and to considerable lengths, without evincing the least apparent increase of size. And hence it is the pressure of the finger,

Arteries sustain no change of bulk from pulsation.

* Précis Elémentaire de Physiologie, tom. ii. p. 320.

† Exp. Inquiry into the Nature, Cause, and Varieties of the Arterial Pulse, &c. Bath, 1816.

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Pulsation alone produced by pressure from without.

or of some other substance, against the side of an artery that alone occasions pulsation, in consequence of the resistance hereby made to the regular flow of the blood; the alternating beat being produced by the greater momentum with which the current strikes against the finger or other cause of obstruction, during the systole, than during the diastole of the heart.

Professor Dollinger has confirmed the experiments of Dr. Parry, by laying bare the carotid of a dog before his pupils, which gave to the eye no proof of altered form or motion, though a pulse was distinctly felt by the finger. And in like manner, a pulsatory motion is always felt by the fingers when applied to a leaden water-pipe while a pump is at work upon it at one end, and alternately giving a fresh pressure to the column of water it contains by forcing in a fresh supply: yet the pipe is all this time incompressible.

[Dr. Barry plunged his arm into a horse's chest, and found the aorta constantly full, without any variation of its distention for an instant, though he took hold of it for five minutes, and repeated the experiment. On the other hand, the vena cava was so little distended, that it felt like a thin flaccid membrane*.]

The pulse of an inflamed part rarely synchronizes with that of the heart or of the neighbouring parts.

In inflammation, the pulse of the inflamed part, in consequence of local excitement, is much more frequent, than that of the heart or of any other organ. Thus, in a whitlow, the radial artery may give to the finger a hundred pulsations in a minute, while not more than seventy strokes may be exhibited in any other part of the system. The rapidity of the pulse is in this case usually in proportion to the degree of the inflammatory action†: and hence, if the system should labour at the same time under ten different inflammations in different parts or organs of a different structure, as glands, muscles, and membranes, it is possible, that it may have so many different seats of pulsation taking place at such different parts at one and the same time, while all of them are at variance with the pulsation of the heart. Even where there is no inflammation,

* Dissert. sur le Passage du Sang à travers le Cœur, p. 78. Paris, 1827.

† Exposition of the Principles of Pathology, &c. By Daniel Pring, M.D. p. 119. 8vo. 1823.

such discrepancies in the pulse are occasionally to be met with, insomuch that Reil gives a case in which the heart, the carotids, and the radial arteries all pulsated differently*: and we can hence readily perceive, why they should be more frequent and striking under the increased action produced by inflammation, and often, in a debilitated organ, more disposed to irregular action, and particularly irregular contractile action, in its capillaries. II. Moving powers of the sanguineous system.

[Respecting the correctness of the statement, that the pulsations of inflamed parts are often more numerous and frequent than those of the rest of the system, the editor has never seen a case in confirmation of it; and, were not the thing asserted by so many men of eminence, he should be inclined to set it down as erroneous. In whitlows, and other cases, the arteries leading to the part affected throb with increased force; but never, as far as the editor's observations reach, with a quickness exceeding that of the action of the heart. However, if the statement made by writers be accurate, physiologists need no longer doubt and dispute about the muscularity of arteries, and even of those which cannot be regarded as capillaries, to which all physiologists impute a contractile power, under some name or another.]

We are let a little into the mystery of the above mentioned phenomenon by the curious fact, that some of the arteries possess a higher degree of contractile power than others, and that *the capillaries possess the highest measure allotted to any of them.* "Indeed, every fact," observes Dr. Bostock, "with which we are acquainted respecting the mechanism and functions of the sanguiferous system, lead us to the same conclusion, that the large arteries are to be regarded as canals transmitting the blood from the heart, where it receives its great impulse, into the smaller branches; and that it is chiefly in these smaller branches that it exercises its various functions†." We may hence see why the capillaries are, in many cases, so much sooner excited than the larger canals, and exhibit so much more violence of action: a distinction of high importance in ex- Capillaries possess more contractibility than the larger arteries. Confirmed by Bostock. Important effect of this fact on inflammation.

* Memorabilia Clinica, vol. ii. fascic. 1-6. Hall. 1792.

† Elementary System of Physiology, vol. i. p. 402. 8vo. 1824.

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plaining the doctrine of inflammation, though it has been less attended to by pathologists than it deserves.

Hence the hypothesis of a *vis à tergo* unsatisfactory, whencesoever derived.

The hypothesis, therefore, of a *vis à tergo*, whether dependent upon the heart alone, upon the arteries alone, or upon a combination of the two, has by no means proved sufficiently satisfactory, or been sufficiently supported by evidence in respect to the entire circulation. Under no modification does it account for the flow of the blood through the veins. And in regard to the whole of the views which have been thus far examined, Mr. John Hunter, as I have already observed, was so extremely discontented, that he placed no more stress upon one part or organ of the sanguiferous system than upon another; upon the heart than upon the arteries; or upon the arteries than upon the veins; regarding the whole economy as the result of a sort of instinct, to which, as just noticed, he gave the name of a stimulus of necessity; and which opinion he supported by making an appeal to insects which have no proper heart; to worms, most of which have no heart whatever; and to monsters which have been born without a heart; whilst at the same time he contended, that veins, at least the larger, exhibit, under certain circumstances, an expansile and contractile power as well as arteries. "I think it probable," says he, "that where there is an universal action of the vascular system, the action of the arteries and veins is alternate: that where the arteries contract, as in many fevers, the veins rather dilate, more especially the larger*." And it is hence, again, highly probable, that, in this "universal action of the vascular system" the secernents or extreme arteries take an important part; and not impossible, though the thing needs proof, that they operate, as has been suggested by Dr. Pring†, by a kind of suction, which may be regarded as a *vis à fronte*.

Further opinions of Mr. J. Hunter.

Action of secernents.

Upon the whole, we may conclude with Haller, that the heart exerts a very considerable degree of force in the general economy of the circulation, although it is impossible to estimate its power with mathematical precision. And we may reasonably refer the first or arterial half of the

* On Blood, p. 187. † Ubi suprà, p. 132, 165.

al circuit of the blood to this force, if not alone, in II. Moving powers of the sanguineous system.
nction with the aid contributed by the elastic and
ractile tunics of the arteries themselves, whether pulsa-
n be a result of these powers alternately exercised, or of
mere local pressure.

It yet remains, however, to account for the second half, Moving power of arterial circulation.
or that which consists in the passage of the blood through
the veins; and, upon this subject, there is one most im- Moving power of venous circulation.
portant and elucidating fact, which, till of late, has never
been in any degree brought forward in the course of the
inquiry. It is this: that, when the heart, by the contrac-
tion of its ventricles, has exhausted itself of the blood con-
tained within it, a comparative vacuum must follow, and Vacuum in the heart produced by its systole.
the blood from the venæ cavæ, or venous system at large,
be sucked up into the right auricle. This ingenious re-
mark seems first to have been thrown out by Dr. Wilson *:
and Dr. Carson of Liverpool, taking advantage of it, has
constructed a simple and beautiful theory of the projectile
powers employed in the circulation, the general principle
of which may be expressed in a few words. The heart is General circulation produced by the double power of the heart acting as a forcing and suction pump; assisted by surrounding agency.
supposed to act at one and the same time in a twofold ca-
pacity. By the contraction of the ventricles, it propels the
blood through the arteries; and by the dilatation of the
auricles, it draws it up from the veins. It is at once,
therefore, a forcing and a suction pump. The contraction
of the heart, and consequently its comparative vacuum, are
supposed to be considerably assisted by the elasticity of
the lungs, and the play of the diaphragm, which we had
occasion to notice at some length in our physiological
proem to the preceding class, and the great resistance
which they jointly afford to the atmospheric pressure;
whilst this very pressure, applied on every part of the ex-
terior of the animal frame, contributes in an equal degree
to the ascent of the blood in the veins; for, as the column
of venous blood is perpetually girt on all sides, and cannot
fall back because of the numerous valves, with which the
veins are furnished, it must necessarily take an opposite or
ascending direction.

[The effect of the expansion of the thorax on the venous

* Wilson's Inquiry, &c. pp. 9. 11. 16. &c.

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circulation has been convincingly illustrated by Dr. Barry, who saw, that, while the pressure of the atmosphere was not duly taken into the account, neither the action of the heart, the resilience of the lungs, the contractile power of the arteries, the action of the capillaries, that of the veins themselves upon their contents, nor the pressure of the muscles, could furnish a full and satisfactory explanation of the causes of the blood's motion in every part of the circulation. In one of his experiments, the jugular vein of a horse was tied, and a large flexible catheter, connected with a spiral glass tube, that was placed in a cup of coloured water, inserted in the veins on the side towards the heart. At each inspiration, the fluid was now seen to ascend in the spiral tube, and, at each expiration, to return slowly towards the cup. From this and other experiments, Dr. Barry infers, 1st, that the cavities of the great veins within the thorax draw towards them the fluids, with which they are placed in direct communication; 2dly, that this attraction or suction only takes place during inspiration. He also concludes from these and other facts, detailed in his work, that *the blood which runs contrary to its own gravity arrives at the heart only during inspiration.* That the power, which impels it at this moment through the veins, is atmospheric pressure. That, as this power can be applied to the blood of the veins only at the moment of inspiration, this blood must move with a velocity, which is to that of the blood moving through the arteries as the time occupied by a whole respiration, is to the time occupied by a single inspiration. That as the blood passes through the greater veins only during inspiration, whilst it is incessantly traversing the arteries, it follows, that an accumulation must take place somewhere between these two orders of vessels. That the frequency of the pulse cannot be taken as the measure of the velocity of the blood's return to the heart, because such velocity is regulated by the repetition of inspirations; &c.* Dr. Barry's experiments derive confirmation from certain facts which are familiarly known; as the retardation of the blood in the veins of the

Effect of atmospheric pressure.

* See Barry's Exp. Researches on the Influence of Atmospheric Pressure upon the Progression of the Blood in the Veins, &c. part i. 8vo. Lond. 1826.

neck during expiration; the turgescence of the veins of the face in musicians while they are blowing into wind instruments; and the rise of the brain when the chest contracts, as is seen after the operation of trephining.] II. Moving powers of the sanguineous system.

There are, nevertheless, numerous difficulties that yet remain to be explained; such as the proportion of projectile power furnished by the conducting pipes themselves; by what means the want of a diaphragm is compensated in birds and reptiles which have no such organ; what constitutes the projectile power in animals that have no heart, and consequently no double pump to work with*; [the mode of contraction in the vessels; since, as there are no valves in the arteries, if the contraction be supposed to take place simultaneously in their whole course, it may appear to some physiologists as likely to have a tendency to propel the blood backwards or forwards. Indeed, Bichat avails himself of the fact, that the arteries have no valves, to strengthen his position that these tubes cannot be muscular.] Difficulties still remaining to be explained.

There is also another curious fact, which physiology has pointed out, but has never hitherto been able to explain; and that is, a direct communication between remote or unconnected organs, apparently, by some other channel, than the circulation of the blood. Something of this kind seems to exist between the spleen and the stomach, the former of which has been proved by Sir Everard Home to receive fluids from the cardiac portion of the latter, though we can trace no intercourse of vessels: but the most extraordinary example of this kind which at present we seem to possess, is the communication which exists between the stomach and the bladder. For the experiments of Sir Everard Home†, and the still more decisive ones of Dr. Wollaston and Dr. Marcet‡, seem to have established beyond a controversy, that certain substances introduced into the stomach, as rhubarb, or prussiate of potash, may pass into the bladder without taking the course of the blood-vessels, and Communication between remote organs distinct from that of the blood. Between the spleen and stomach. Between the stomach and bladder.

* Distribe Anatomico-Physiologica de Structurâ atque Vitâ Venarum; à Medicorum ordine Heidelburgensi præmio proposito ornata. Auctore Henrico Marx. 8vo. Carlsruæ, 1822.

† Phil. Trans. 1811, p. 163. ‡ Ibid. p. 96.

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consequently by some other channel; a channel, indeed, of which we know nothing. This is a subject well worth studying: for if two organs, so remotely situated as the stomach and the bladder, be thus capable of maintaining a peculiar intercourse; so other organs may possess a like intercommunion; and, by such means, lay a foundation for those numerous sympathies between distant parts which so often strike and astonish us. M. Magendie's hypothesis, that veins are absorbents, may explain the facts in Sir Everard Home's experiments, but has no bearing upon that of Dr. Wollaston and Dr. Marcet.

This subject entitled to further inquiry.

Doctrine of pulsation, and its importance.

The discovery of the circulation of the blood has given a great importance to the DOCTRINE OF PULSATION; for by the strength or weakness, the slowness or frequency, the hardness or softness, the freedom or oppression, the regularity or irregularity of the beat of the artery against the pressure of the finger, we are now able to determine many momentous facts, relative, not merely to the state of the heart, but of the general system; and, in many cases, to prognosticate upon grounds which were altogether unknown to the earlier cultivators of medicine. And, on this account it is, that the Greek physicians took but little notice of the pulse, which, even in the days of Celsus, was regarded as a *res fallacissima*.

Pulse, how influenced.

The pulse is influenced indirectly by the general state of the body, but directly by that of the heart, or of the arteries, or of both, or of the quantity of blood which the vessels have to contain.

Standard in adult life.

In an adult male of good health, and not too corpulent, the common standard of the pulse may be fixed at seventy strokes in a minute: but it varies in different individuals from sixty to eighty, being greatly affected by the temperament, and partly by the habit of life. In the man of a high sanguine character, it rarely sinks below eighty, and is often at ninety; and in the melancholic, it seldom rises above sixty, and sometimes sinks to forty. In some idiosyncrasies the discrepancy is so considerable, and complicated with other changes than those of frequency and tardiness, that there is no reducing them to any rule. Sir John Floyer, who has numerous bright openings in the midst of a generally obscure horizon, set down the standard

Influenced by temperament and idiosyncrasies.

number of pulses in health at seventy-five, and affirms that they cease altogether at forty, and are followed by a loss of all sense and motion*. II. Moving powers of the sanguineous system.

Lizarri tells us, however, of a person, whose pulse was not more than ten beats in a minute†. Dr. Heberden says, he once saw a person whose pulse, as he was told, did not number in the beginning of his illness above twelve or sixteen in a minute; though he suspects in this and all other instances, where it is below forty, that the artery beats oftener than it can be felt; because such low pulses are usually unequal in their strength, and some of the beats are so faint as but just to be perceived; so that others, probably still fainter, are too weak to make a sensible impression on the finger. He had attended two patients, who, in the best health, had always very unequal pulses, as well in their strength as in the spaces between them, but which constantly became regular as the patient grew ill, and gave a never-failing sign of recovery in their once more returning to a state of irregularity‡. In women the pulse is, generally speaking, six or eight strokes in a minute quicker than in men, and hence, many women of firm health and a lively disposition have a standard pulse of eighty-five. Singular instances. Quicker in women than in men.

In a weakly frame the pulse is usually rapid; for debility is almost always accompanied with irritability, and the heart partakes of the general infirmity. In this case, also, from the feebleness with which the heart contracts, the ventricle is but imperfectly emptied, and consequently sooner filled again, and sooner stimulated to contraction. Hence, in infancy the pulse is peculiarly quick, and gradually becomes slower as the child increases in strength. Dr. Heberden, who paid particular attention to this subject, estimates the pulse on the day of his birth, and while asleep, from a hundred and thirty to a hundred and forty; and fixes it at little less than the same rate, or that of a hundred and twenty strokes, for the first month. During the first year, he calculates it at from a hundred and twenty to a hundred and eight: during the second, at from a hundred to ninety: during the third, from a hundred and eight Rate in infancy.

* The Physician's Pulse-Watch, &c. 2 vols. 8vo. Lond. 1707.

† Raccolta d'Opusculi Scientifici, p. 265.

‡ Med. Trans. vol. ii. art. ii. p. 29.

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to eighty, at which it continues for the three ensuing years. In the seventh year, it is frequently reduced to seventy-two; and in the twelfth, to seventy*. In advanced age, the pulse sinks often considerably below sixty strokes in a minute. "I knew one," says Dr. Heberden, "whose chief distemper was the age of four-score, in whom, for the last two years of his life, I only once counted so many as forty-two pulsations; but they were seldom above thirty, and sometimes not more than twenty-six. And though he seemed heavy and torpid, yet he could go out in a carriage, and walk about his garden, receive company, and eat with a tolerable appetite."

In advanced life.

Singular anomaly.

I have at this moment under my care a case of still greater anomaly, in which the pulse is never more than thirty, and more commonly even after walking, not more than twenty-seven strokes in a minute. Mr. Alexander, the patient I refer to, is sixty-five years of age; about six years ago, from the bursting of a pipe for the conveyance of coal-gas, he fell down in a fit of asphyxy, from which he revived with great difficulty. The reducing plan was carried too far, and, though he has recovered from the accident, and his head is uniformly clear, he is dyspeptic, and subject to palpitations of the heart. [At the present time (September, 1828), there is a prisoner in the Fleet prison, whose pulse is sometimes as low as thirty, and hardly ever above forty. His constitution is hypochondriacal and asthmatic.]

To what number calculable by the finger.

The pulse may be counted with great accuracy up to a hundred and forty or a hundred and fifty in a minute; and if the stroke be equal, and the wrist slender, so that we can take in more than half the artery by the pressure of two fingers, we can reach a hundred and eighty; Professor Frank gives an instance of two hundred† in a case of complicated carditis; but, beyond this, there is great confusion and uncertainty: and it is difficult, therefore, to understand by what nice mode of measurement Dr. Wendt could distinguish, as he tells us he has done, a pulse of two hundred and forty-three strokes in a minute‡. Sir

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* Med. Trans. vol. ii. art. ii. p. 29.

† De Cur. Hom. Morb. Epit. tom. ii. p. 175. 8vo. Manhem. 1792.

‡ De Mutatione quâdam Pulsûs insigni. Erlang. 1778. V. Bald. Syll. v.

John Floyer sets down a hundred and forty as the amount of "as many pulses as can be counted *."

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The pulse is quickened by very slight excitements both external and internal. The stimulus of the air, of the light, and of sounds, is sufficient to make that of an infant awake fifteen or twenty strokes more frequent than when it is asleep, and beyond their control. The pulse of an adult is usually quickened eight or ten strokes during the digestion of a meal; and running, or any sudden and rapturous emotion of the mind will double the ordinary scale. The depressing passions, on the contrary, check it, and have sometimes put a total stop to the heart's motion, with a deadly shock, and killed the patient in a moment. There are many drugs that have a like tendency, of which all the simple narcotic poisons afford examples. The digitalis and hyoscyamus are expressly used on account of this property: the prussic acid, and the plants that contain it, as bitter almonds and the leaves of the *prunus laurocerasus*, when given in free doses, destroy the irritability, and extinguish the pulse instantly; and this so effectually that the heart, when immediately examined, has been insensible, not only to puncture, but to concentrated acids.

Quickened by slight excitements.

In like manner soon checked.

Sometimes stopped instantly.

As the excitement of the stomach, during the natural process of digestion, is capable of accelerating the pulse eight or ten strokes in a minute, there can be no difficulty in conceiving, that it may be still more accelerated by a morbid excitement of any other large organ, and particularly where the primary seat of excitement is in the sanguiferous system itself. And as, generally speaking, the frequency of the beat is in proportion to the degree of excitement, the pulse becomes a sort of nosometer, or measurer of the violence and danger of the disease: and it measures it equally, whether the return of the beat be below the standard of health or above it.

How quickened by morbid excitements.

Hence the pulse a nosometer.

How far, in either case, the pulse may vary from its natural number without great danger, depends upon a multitude of collateral circumstances, as the age of the patient, his idiosyncrasy, the peculiar disease he is labouring under,

Other circumstances to be noticed in connexion with its quickness.

* The Physician's Pulse-Watch; or an Essay to explain the old Art of feeling the Pulse, and to improve it by the Help of the Pulse-Watch. 2 vols. 8vo. Lond. 1707.

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and the strength or weakness of the system. And hence, in addition to the number of the pulse, we should also attend to its degree of fulness, softness, firmness, freedom, and regularity; a critical knowledge of which can only be learnt by experience and a nice discrimination.

The doctrine often rendered too complicated.

It has been highly injurious, however, to the study of medicine, that this subject has been often too finely elaborated, and the variations of the pulse been ramified into so many divisions and subdivisions, and nice unnecessary distinctions, as to puzzle the young and be of no use to the old. And hence, some of the best pathologists of modern times have been too much disposed to shake off nearly the whole of the incumbrance, and pay no attention whatever to the pulse except in regard to its frequency. Amongst this number was Dr. Heberden: "Such minute distinctions of the several pulses," says he, "exist chiefly in the imagination of the makers, or, at least, have little place in the knowledge and cure of diseases. Time, indeed, has so fully set them aside, that most of these names of pulses are now as unheard of in practice as if they had never been given*." And in forming, therefore, his prognostic of a disease, while he appeals to the pulse merely in respect to its number, he draws his other grounds of decision from the nature of the malady, and the violence of its specific signs.

Sometimes too much simplified.

But this is to limit the subject to too strict a boundary; and to exclude ourselves from what, in many instances, are clear and even leading diagnostics. There are some practitioners, and of very high merit too, whose fingers are no more capable of catching the finer distinctions of the pulse, than the ears of other persons are the niceties of musical sounds. I suspect this was the case with Dr. Heberden, as it was also with the late Dr. Hunter; of whom Mr. John Hunter observes, that, "though he was extremely accurate in most things, he could never feel that nice distinction in the pulse that many others did, and was ready to suspect more nicety of discrimination, than can really be found. Frequency of pulsation in a given time is measurable by instruments; smartness or quickness in

* Med. Trans. vol. ii. p. 20.

the stroke, with a pause, is measurable by the touch, but the nicer peculiarities in the pulse are only sensations in the mind. I think," continues this distinguished physiologist, " I have been certain of the pulse having a disagreeable jar in it when others did not perceive it, when they were only sensible of its frequency and strength: and it is, perhaps, this jar that is the specific distinction between constitutional disease or irritation and health. Frequency of pulsation may often arise from stimulus, but the stroke will then be soft; yet softness is not to be depended on as a mark of health, it is often a sign of dissolution; but then there must be other attending symptoms *."

II. Moving powers of the sanguineous system.

Dr. Fordyce's table of the pulse is, perhaps, unnecessarily complicated; but the strength or weakness, fulness or smallness, hardness or softness, regularity or irregularity, of the pulse, are indications nearly as clear as its frequency or slowness, and, in many cases, quite as diagnostic of the general nature of the disease. Frequency and slowness of the pulse, taken by themselves, indicate little more than the degree of irritability of the heart, or the force of the stimulus that is operating upon it. The strength and regularity, or weakness and irregularity of the pulse are as palpable to the finger as the preceding sign, and show, in characters nearly as decisive, the degree of vigour or debility of the heart; and hereby, except where this organ is labouring under some local affection, the vigour or debility of the system, which a mere variation in the state of the frequency of the pulse will not tell us. A full and a small pulse may be distinguished with almost as much ease as any other property it possesses; this Mr. John Hunter ascribes to the state of the arteries: but, if I mistake not, it gives us rather a measure of the quantity of blood circulating through the system, than of the muscular strength of the arteries, or of the heart itself; which is often a very important indication, and especially when combined with the preceding signs; as it will then be our best guide in cases where we have determined upon emptying the vessels as far as we can do it without danger. Hardness and softness of the pulse, together with that vibratory thrill which has been called

Strength and regularity, or weakness and irregularity, of the pulse.

Full and small pulse.

Hard and soft pulse.

* On Blood, part ii. ch. iii. p. 318.

II. Moving powers of the sanguineous system.

wiriness, are not quite so easily learnt as its fulness and smallness, but a nice finger will readily discriminate them, and practice will point out the difference to every one. These characters Dr. Fordyce makes dependent, and I think with great reason, on the state of the arteries, rather than on that of the heart, or on the quantity of the circulating fluid; and Mr. John Hunter concurs in the same view. They measure the degree of vascular tone, or power of resistance; and when the same effect, whether above or below the natural standard, takes place in the capillary arteries, it produces that change in the pulse which he distinguished by the names of obstruction and freedom, but which it is not always easy to discriminate from several of the preceding qualities; nor is it of great importance, as we have in such cases other symptoms that more strikingly manifest the same fact.

Obstructed and free pulse.

Examples of the doctrine carried to an extreme.

Thus far, perhaps, the doctrine of pulsation may be studied to advantage: but when, beyond this, we come to a distinction between the free and dilated pulse, as proposed also by Dr. Fordyce; the quick and the frequent, as proposed by Stahl*; and the dicrotic, coturnizing, and inciduous, proposed by Solano†, as mere subvarieties of the rebounding, or redoubling, itself a variety of the irregular pulse, we perplex pathology with a labyrinth in which the student is lost, and the master wanders to no purpose. "Infida," says Professor Frank, "arbitraria et æquivoca est multorum de pulsibus criticis doctrina‡."

Pulse of Solano.

Organic pulses of De Bordeu.

De Bordeu acquired great reputation in the middle of the last century, for applying the doctrine of pulsation as an index to the diseases of every distinct organ of the body; whence he not only adopted most of the subdivisions of Solano, but added others, and subdivided them still further.

On what founded.

He started it as a new hypothesis, which he endeavoured to support by facts and arguments, that every separate organ possesses a principle of life in some measure peculiar to itself, and independent of the rest of the frame; that each is endowed with a proper function, and susceptible of

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* De Differentiâ Pulsûs celeris et frequentis.

† Novæ Observationes circa Crisium Prædictiones et Puls û. Wetsch, Medicinæ ex pulsû. Vind. 1770. Vienn. 1773.

‡ De Curandis Hom. Morbis Epitome, tom. I. p. 30.

proper sensations and movements; and that, by the agreement and co-operation of all these distinctive powers, the life and health of the entire system are built up and maintained. These principles are developed and defended in his thesis, "De Sensû genericè considerato," published at Montpelier in 1742. Though arrogating the merit of originality, they are, however, little more than a revival of the ancient doctrine of harmony invented by Aristoxenus, and at one time very popular in Greece, as we learn from Lucretius:

II. Moving powers of the sanguineous system.

> —Multa quidem sapientum turba putarunt
> Sensum animi certâ non esse in parte locatum;
> Verùm habitum quemdam vitalem corporis esse,
> 'ΑΡΜΟΝΙΑΝ Graiei quam dicunt *.

M. De Bordeu, in adopting this hypothesis, supposed farther, that an affection of any particular organ will occasion a peculiar variation in the pulse from its natural state; and, by a careful attention to these changes, he conceived himself capable of ascertaining the seat of the disease, and the channel through which nature was aiming at a crisis. He describes, in consequence, an overwhelming multiplicity of *organic pulses:* but his general division is into superior and inferior pulses: and this he founds on an observation that the actions of the parts seated above the diaphragm, and of those below, excite very different impressions on the circulatory system. These views are chiefly given in the most famous of all his publications, entitled, "Recherches sur le Pouls par rapport aux crises." Paris, 1756. 8vo. This hypothesis became extremely popular in France and Germany, and excited a considerable degree of attention at Edinburgh. It is now, however, little heard of, and is by no means worth reviving.

How applied.

In effect, a voluminous and complicated classification of pulses is rather a proof of an active fancy, than of a sound judgment: and though Dr. Heberden and Dr. Hunter may have thought too lightly of this branch of pathognomy, it is better to adopt their simplicity, than the puerile conceits of many more elaborate pulse-makers. The Chinese have

* De Rer. Nat. Lib. III. 98. See the author's examination of this hypothesis, and its resemblance to others of later date, in the notes to his Translation of Lucretius, book v. 100 and 104.

II. Moving powers of the sanguineous system.

a more operose system of pulsations than any that have appeared in Europe; but nothing can be more whimsical than their divisions, though Floyer fell in love with them, and thought them models of wisdom and accuracy. Avicenna treated of the pulse musically; and Hoffenuffer, pursuing his principles, drew up, in 1641, a musical scale of the pulse, dividing it into musical time, and marking the different beats by semibreves, minims, and crotchets, semiquavers, and demisemiquavers; thus reducing his patient to a harpsichord, and his profession to a chapter on thorough-bass.

III. Intrinsic properties of the blood. Its specific gravity and temperature.

III. [Blood, when first drawn from the vessels, is an adhesive fluid, of a homogeneous consistence, of the specific gravity of about 1.050, of a red colour in man and the higher animals; and of the temperature of about 98° in the human subject. Soon after its discharge from the vessels, if it be suffered to remain at rest, it begins to coagulate, and, as the process advances, it separates into two distinct parts, namely, a red mass floating in a yellowish fluid. The red part is called the clot, or crassamentum, and the fluid part the serum. The average time, requisite for the coagulation of venous blood, is said to be seven minutes; and the crassamentum has been estimated to amount to about one-third of the weight of the serum*. In the act of coagulation, it is generally believed that an evolution of heat takes place; though the point is yet a contested one, Dr. J. Davy's investigations† disagreeing with those, on which the preceding doctrine is founded, and corroborating the view adopted by Mr. Hunter.

Serum and crassamentum.

Whether heat is evolved during the process of coagulation.

Fibrin.

The coagulum, or clot, may be deprived of its red colour by repeated ablution in water; thus showing, as Dr. Bostock observes, that the colouring matter is only mechanically mixed with the substance left behind, called fibrin, and not chemically combined with it.

Causes preventing coagulation.

Many causes of sudden death have the curious effect of impeding the coagulation of the blood. This is exemplified in persons rapidly killed by lightning and electricity; a blow on the stomach, or injury of the brain; by the bite of a rattlesnake and other venomous animals; by acrid vegetable poisons, like laurel-water; excessive fatigue; and

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* See Bostock's Physiology, v. i. p. 434.

† Edin. Med. Journ. No. 95.

even violent agitation of the mind. In the same cases, Mr. Hunter found a singular coincidence between the want of coagulability in the fibrin of the blood, and the loss of contractility in the muscles after death. The body is also disposed to putrefy with unusual quickness. Hence there appears some analogy, if not identity, between muscular contraction, and the coagulation of the fibrin of the blood; an opinion strengthened, as Dr. Bostock has observed, by the fact, that the chemical composition of fibrin is similar to that of muscle. From the relation between the coagulation of the blood and the contractility of muscles, Mr. Hunter appears to have deduced his celebrated hypothesis of the life of the blood; a doctrine, which embraces the principle, that a fluid is capable of organization, and may be endued with functions, either identical with, or very similar to, those which are the most characteristic of the living animal solid *.

III. Intrinsic properties of the blood.

At the temperature of 160°, the serum itself coagulates, from which a fluid, termed the serosity, may yet be obtained by pressure. The coagulated part is albumen, which principle exists also in the serosity, but is suspended by the presence of an alkali.

Serum coagulable by heat. Serosity. Albumen.

The coagulation of the blood is a circumstance, not only interesting to the physiologist, but a source of useful information to the medical practitioner; for certain appearances of the blood, after its coagulation, are a general indication of inflammation, or other disturbance in the system. Thus, when the upper stratum of the coagulum has a yellow buffy look, in consequence of the red globules having subsided from it; when its surface is more or less concave; and the quantity of serum in the basin copious; the blood is said to be sizy, and to exhibit the *buffy coat*, or *inflammatory crust*. As, however, the buffy coat frequently occurs, when no inflammation nor inflammatory fever exists, the state of the pulse and other symptoms should always be duly considered, and the decision for the further use of the lancet never be founded merely on the look of the blood, without reference to other circumstances in the case.]

Buffy coat, or inflammatory crust.

* Bostock, vol. cit. p. 443.

III. Intrinsic properties of the blood.

To speak minutely of the CONSTITUENT PRINCIPLES OF THE BLOOD, would carry us too far into the regions of animal chemistry; and I shall hence limit myself to a very brief analysis of those that are fixed or confinable, having already paid some attention to the gases in the physiological proem to the preceding class.

Analysis of Parmentier and Deyeux.

For the first judicious account of these principles, we are indebted to an elaborate memoir of MM. Parmentier and Deyeux, who arranged them under the following heads:— 1. A peculiar aroma, or odour, of which every one must be sensible who has been present at a slaughter-house, on cutting up the fresh bodies of oxen. 2. Fibrin, or fibrous matter, frequently also called coagulable lymph, and gluten. 3. Gelatine. 4. Albumen. 5. Red colouring matter. 6. Iron. 7. Sulphur. 8. Soda. 9. Water.

Corrected by later experiments.

Still minuter and more exact experiments have since been made upon particular portions or the whole of the blood, especially by Dr. Marcet*, Dr. Bostock†, and Berzelius‡, which confirm the greater part of the preceding results, but have detected a few errors which it is necessary to notice.

No gelatine in the blood.

Neither the blood of man, nor of quadrupeds, so far as they have been examined, contain any gelatine. "The mistake," says M. Berzelius, "arises from the gelatinous appearance of the albumen; I have never been able to detect a particle of gelatine in blood, and, as far as my researches extend, I have found gelatine to be a substance altogether unknown to the economy of the living body, and to be produced by the action of boiling water on cartilage, skin, and cellular membrane; substances which are totally distinct from fibrin and albumen." It follows, therefore, that wherever gelatine is found in the animal frame, it is produced by a decomposition and recombination of the particles of the blood by the action of the secerments. But instead of the gelatine, Dr. Bostock has since discovered in the serosity, or that part which remains when the lymph or serum has parted with its albumen by heat, a distinct substance which he has denominated from its quality, uncoagulable

Uncoagulable matter of Bostock.

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* Trans. Medico-Chirurg. Soc. vol. ii. p. 370.
† Id. vol. i. ‡ Id. vol. iii.

matter *, and which Dr. Marcet has called muco-extractive matter. Berzelius has affirmed it to be impure lactate of soda. III. Intrinsic properties of the blood.

The sulphur, detected in the blood by Parmentier and Deyeux, does not exist in a free state, but is a component part of its albumen, as is also its carbon and hydrogen, which, in consequence, have as strong a claim to be considered as constituent principles as sulphur. It is by means of its constituent sulphur, that the albumen of blood or of an egg becomes capable of blackening a silver instrument employed to stir it. Sulphur of the blood a component part of the albumen alone.

The iron traced in the blood is, in like manner, a constituent principle of the red colouring matter, and exists in so intimate an union with it, that it cannot be detected by the best re-agents we possess, till the composition of the colouring matter is totally destroyed by heat, or some other means. Iron of the blood a constituent of the colouring matter.

With these explanations, we are now able to proceed to a clear comprehension of the following brief analysis of the blood, as corrected by the later experiments of Berzelius, supported by those I have just adverted to of Dr. Marcet and Dr. Bostock. Analysis of Berzelius.

Blood is composed of two parts: one, homogeneous and liquid; and one, only suspended in the liquor, and spontaneously separating from it when at rest. Blood composed of a suspending and a suspended part.

The homogeneous and liquid part consists of much albumen and a little fibrin, both combined with soda, and all dissolved in water. It also contains a small portion of a few other saline and animal substances. Liquid or suspending part.

The suspended part consists of the colouring matter. It differs from albumen chiefly in its colour and its insolubility in serum. Iron enters as a constituent ingredient into this material, in the proportion of 1.300 of its weight. It seems to be the colouring principle; but cannot be separated from it as long as it continues to be colouring matter. This separation can only be effected by combustion, or by the concentrated acids, both of which agents entirely decompose the substance, with which the metal is combined. The iron exists in the form of oxyde, with a small propor- Colouring matter, or suspended part.

* Elementary System of Physiology, vol. i. p. 476. 8vo. 1824.

III. Intrinsic properties of the blood.

tion of subphosphate of the same. But the colouring matter cannot be artificially produced by uniting albumen with red subphosphate of iron.

Earthy phosphates and carbonate of lime, how far existent in the blood.

Fibrin, albumen, and colouring matter, resemble each other so closely, that they may be considered as modifications of one and the same substance. Each of these three substances *yields*, when decomposed, but does not *contain*, earthy phosphates and carbonate of lime; for the entire blood holds in solution no earthy phosphate, except, perhaps, in too small a quantity to be detected.

How the bones are supplied with earthy materials.

From these earths it is clear, that the bones derive their earthy supply; which, however, it is also clear they can only do, as in the case of the formation of gelatine, in consequence of a decomposition of the blood as it arrives at the secernents of the bones.

Colouring matter, how separable.

Vauquelin endeavoured to separate the colouring matter from the blood by means of sulphuric acid: but, this does not very well answer the purpose. A method, proposed by Berzelius, is much simpler, as well as more effective*. It consists in placing the clot or coagulum of blood upon blotting paper, to get rid of the serum as completely as possible. The clot is then to be put into water, in which the colouring matter dissolves, while the fibrin remains unaffected; when the water being evaporated, the colouring matter is obtained in a separate state. On reducing this matter to ashes, about 1.200 of iron can always be separated.

Whence the iron, sulphur, &c. obtain an existence in the blood.

It is difficult to determine, by what means the iron or the sulphur, or the elementary principles of calcareous earth, obtain an existence, or the means of existence, in the blood. If these materials were equally diffused throughout the surface of the earth, we might easily conceive, that they are introduced through the medium of food. But as this is not the case, some regions, like New South Wales, at least on this side the Blue Mountains, containing no lime-stone whatever, and others no iron or sulphur, while all these are capable of being obtained apparently as freely from the blood of the inhabitants of such regions, as from that of those who live in quarters, where such materials enter largely into the natural products of the

* Ann. de Chim. et de Phys. v. 42.

soil; it is perhaps most reasonable to conclude, that they are generated in the laboratory of the animal system itself, by the all-controlling influence of the living principle. III. Intrinsic properties of the blood.

What may be the aggregate quantity of any of these minerals in the mass of blood belonging to an adult, has not been determined with accuracy. The amount of the iron has been calculated by Parmentier and Deyeux, upon grounds furnished them by Menghini, at seventy scruples, or very nearly three ounces, estimating the average of blood in the vessels of an adult at twenty-four pounds, which is most probably something short of the mark. Aggregate amount of iron in the blood of an adult.

Whether iron exists in any other part of the animal frame, than the colouring matter of the blood, is in some degree doubtful. Vauquelin seems to have traced it in egg-shells and oyster-shells; and Mr. Brande thinks he has done the same in the chyle and in the serum, and this as largely as in the colouring matter of the blood, which, after all, he thinks, contains only a very minute quantity *. But these experiments are too indefinite, and by no means coincide with those of Berzelius, since confirmed by other chemists. If the experiments of Menghini may be relied upon, human blood contains a larger proportion of iron, than that of quadrupeds; quadrupeds have more than fishes; and fishes more than birds. Whether iron exists in any other part than the colouring matter.

But, though there can be no longer any question of the existence of iron as a constituent principle in the blood, we are in total ignorance of the part it is intended to perform. It is, perhaps, the colouring material, though, as I have already observed in the physiological proem to the preceding class, even here we are still very much in the dark, and are overwhelmed with contending hypotheses. It is probable, that the red particles of the blood contribute to the strength of animals to whom they are *natural*, as conjectured by Mr. J. Hunter, and that the strength of such animals is in proportion, or nearly so, to their number. Yet such particles are never found in the blood of several classes of animals, as insects and worms; and in those in which they are found, they have often no existence in the commencement of life; for they are not discoverable in the egg What part the iron is intended to perform.

* Phil. Trans. 1812, p. 112.

III. Intrinsic properties of the blood.

of the chick, when the heart first begins to pulsate; nor are they, in any animals, pushed into the extreme arteries, where we must suppose the serum reaches. And hence, whatever their value, they cannot be regarded as the most important part of the blood, or as chiefly contributing to the growth and repair of the system*.

Form and diameter of the red particles of the blood.

Various attempts have at different times been made to determine the form and measure the diameter of the corpuscles of the blood; but they do not seem to have been accompanied with very great success. Della Torre, by applying his microscope, detected the red particles, as he thought, to be flat circles or rings with a perforation in the centre;

Hewson's hypothesis:

and Mr. Hewson ascribed to them the same shape, but represented them as hollow or vesicular, with a dot of red colouring matter in the centre instead of a perforation; so that, if his description could have been substantiated, they might literally have been regarded as the wheels of life moving on iron axles. Mr. Hewson's hypothesis, however, extended much farther; for, by a variety of plausible experiments, he persuaded himself, and many others also, that it is the office of the thymus and lymphatic glands to secrete and elaborate these vesicles, which are then carried by the lymphatics and thoracic duct to the arteries, and from the arteries to the spleen which furnishes them

long since overthrown.

with their coloured axles. Some of these physiological and microscopic divertisements, however, have been long overturned; while the general shape of the corpuscles has been gravely shown by other exquisite analyses to be globular; the diameter of which, as measured by the micros-

Bauer's microscopic experiments.

copical experiments of M. Bauer, is 1.2000 part of an inch; a dimension, however, which has since been reduced by Captain Kater to 1.5000 part of an inch†. M. Bauer has also ascertained, as he thinks, that it is not the centre of the globule that is dotted, but its outline that is surrounded with colouring matter; so that, instead of being annular wheels with iron axles, they are spherular wheels with iron tiers. It is somewhat singular that, in the revolution of science, M. Bauer's views are now sinking below the horizon, while those of Mr. Hewson are again

* On Blood, pp. 46. 48. † Phil. Trans. 1818, pp. 173. 187.

ascending into notice: for the later experiments of M. Prevost have restored to the red corpuscles of the blood their flat circles and points; and divested them of a globular form. MM. Prevost and Dumas believe the colouring matter to be a membrane, by which these corpuscles are surrounded. They pursued a dexterous method of drying the red particles as soon as separated, and found, that when divested of this red matter and rendered colourless, they are of the same size in every animal they examined; being 1.7600 part of an inch. But that, with the colouring matter, the size differs in different animals; being 1.3100 of an inch in man, the dog, rabbit, pig, guinea-pig, and hedge-hog; in the ass 1.4200; the cat and man, 1.4300: the sheep, horse, mule, and cow 1.500; and the goat 1.700. These particles have a peculiar tendency to form themselves into lines, as observed by Sir E. Home; the lines resembling in every respect the muscular fibre. Fibrin they found also to be a collection of colourless corpuscles of the same kind as the above; the same corpuscles may be also traced in the white of the egg. Those of a chick six days after incubation, they found larger than those of a hen; as also that those which in some young animals are circular afterwards become elliptical*. Even this last was also observed by Hewson: and the remarks may lead to some facts connected with inflammation, by which they may be influenced; as they may be likewise by the temperature of hot climates.

III. Intrinsic properties of the blood.

Experiments of Dumas and Prevost.

We have also still much to learn, not merely in respect to the real difference between human blood and that of quadrupeds, but the real difference between that of any one species of animal and any other. M. Berzelius observes that "the great agreement in the composition of human and ox blood is remarkable, and explains to us the possibility of the phænomena observed in the experiments in transfusion." But we have a clear proof, that the blood of one species of animals differs so much from that of another, either in its principles or their modification, that no benefit can result from transfusion, unless from like kinds to like kinds. Thus, according to several in-

Real difference between the blood of different species undetected.

* Annales de Chimie, in Loco.

III. Intrinsic properties of the blood.

teresting experiments of Dr. Blundell, a dog, asphyxiated by hemorrhage, may easily be recovered by a transfusion of blood from another dog, but is little or not at all relieved, if the blood be taken from man *; and the experiments of MM. Prevost and Dumas precisely coincide with this doctrine.

[In the operation of transfusion, which seems to have been invented, or, at least, perfected by Lower about 1660, the artery of one animal is connected by a tube with the vein of another animal, under which circumstances the first is gradually deprived of its blood, and the second rendered plethoric. If an opening be made in the veins of the latter, its original blood will escape, and be replaced by that of the other animal. At the time, when these experiments were made, diseases were supposed to depend upon morbid qualities in the blood; and as transfusion held out the prospect of changing this fluid at pleasure, it was hailed as a most important means of restoring the health, and some individuals actually submitted to have the blood of lambs or calves transmitted into their vessels, for the purpose of being cured of certain diseases, or of having their vigour renovated†. The first experiments performed on the human subject ended fatally; and in France the continuance of the practice was prohibited by law. Dr. Blundell, however, has established the important fact, that the blood of an animal of the same species may be safely transfused; but, that if the blood of a different kind of animal be employed, great disorder of the functions is occasioned, and death generally ensues. With strict attention to this principle, the experiment has now been tried upon the human subject in several instances, and occasionally with decided success.]

Transfusion.

Blood, in many respects, the most important fluid of the animal frame:

Upon the whole, however, we cannot but regard the blood as, in many respects, the most important fluid of the animal machine: from it all the solids are derived and nourished, and all the other fluids are secreted; and it is hence the basis or common pabulum of every part. And as it is the source of general health, so it is also of general

* Trans. Medico-Chir. Soc. vol. ix. p. 86.

† See Bostock's Physiology, vol. i. p. 348.

disease. In inflammation, it takes a considerable share, and evinces a peculiar appearance. The miasms of fevers and exanthems, are harmless to every other part of the system, and only become mischievous when they reach the blood: and emetic tartar, when introduced into the jugular vein, will vomit in one or two minutes, although it might require, perhaps, half an hour if thrown into the stomach, and in fact does not vomit till it has reached the circulation. And the same is true of opium, jalap, and most of the poisons, animal, mineral, and vegetable. If imperfectly elaborated, or with a disproportion of some of its constituent principles to the rest, the whole system partakes of the evil, and a dysthesis or morbid habit is the certain consequence; whence tabes, atrophy, scurvy, and various species of gangrene. And if it become once impregnated with a peculiar taint, it is wonderful to remark the tenacity with which it retains it, though often in a state of dormancy or inactivity, for years or even entire generations. For as every germ and fibre of every other part is formed and regenerated from the blood, there is no other part of the system that we can so well look to as the seat of such taints, or the predisposing cause of the disorders I am now alluding to; often corporeal, as gout, struma, phthisis; sometimes mental, as madness; and occasionally both, as cretinism.

III. Intrinsic properties of the blood. acted upon by external bodies, volatile and concrete. When imperfect, the great source of morbid habits. Transmits mental and corporeal taints to subsequent generations.

[Whether the blood be primarily affected in certain diseases, or chiefly concerned in the transmission of what have been considered hereditary disorders, as the author has conjectured, are questions very difficult to solve; and the doctrine, if carried too far, would be at variance with some well established facts and approved theories, which ascribe the first origin of many complaints rather to an affection of the blood-vessels, absorbents, or nerves, than to a change of the blood itself. It must not be inferred, however, that, in disease, this fluid is not subject to alteration; a fact, of which the valuable observations of Dr. Armstrong furnish convincing evidence; nor even that it may not be sometimes the primary vehicle of disease into the constitution. Passing over the variations, which occur in its quantity, velocity, and distribution, subjects on which this able physician has offered many judicious and practical reflections, let us attend to what his ex-

Dr. Armstrong's opinion on this subject.

III. Intrinsic properties of the blood.

perience has taught him respecting the altered qualities of the blood in cases of disease. It differs, he says, in different persons, and even in the same person under different circumstances. In general, plethora takes place either in strong individuals of firm fibre, or in plump lax persons. In both cases, there is a superabundance of the red portion of the blood, but the crassamentum is much firmer in the former subjects, than the latter. On the contrary, when local plethora affects the mucous textures of pale thin men, relaxed by sedentary habits and a spare slop diet, the red particles are often deficient, and the quantity of fibrin and albumen lessened. A similar effect is well known to result from copious and repeated blood-letting, the blood becoming thinner and thinner, and the skin paler and more flabby, than natural. Indeed, says Dr. Armstrong, the blood is brought into a like condition by protracted disorder, especially where the digestive processes are disturbed, as in cases of chlorosis, in some of which he has known the blood flow from the punctured vein, like so much thin claret, or very pale red ink. Nor are the red particles alone affected; for, when rich blood shows the buffy coat on coagulating, it is firm, opaque, and striated generally on the surface; whereas, in poor blood, it is loose and semi-opaque, like so much ill-strained jelly; appearances unequivocally revealing that the fibrin itself is more or less altered. In several cases where the circulation was much increased in force and frequency, Dr. Armstrong has seen the blood gush from an opened vein with the bright vermilion colour of arterial blood; while, on other occasions, where its course had been impeded or retarded in the small arteries, it exhibited a dark venous character. In some examples of fully developed typhus, where the tongue was glazed, dry, and brown, and the lips and cheeks of a dusky or purple hue, he has seen the blood from the temporal artery present a venous colour. The circulation of such blood, within the arteries, seems to Dr. Armstrong to be connected with many of the most conspicuous phenomena of the advanced stage of genuine typhus, and dependent upon a specific bronchitis, in which the mucous texture of the bronchial tubes is loaded with dark blood, and smeared with a copious and tenacious secretion. The contagions of small pox, measles,

Alterations of the blood in disease.

and scarlatina, he says, first operate on the blood, after which the solids are specifically affected, especially the skin and mucous membrane of the air passages. In specific fevers, where the venous blood is not duly converted into arterial from the presence of bronchitis, that fluid emits an unpleasant odour, not unlike the smell of bugs. The blood of those who live on animal food has more azote in it, than the blood of persons who live on vegetables. A diet of salted meat likewise produces a change in the blood, as illustrated in cases of sea-scurvy. The circulation of extraneous substances in the blood appears to Dr. Armstrong to be a frequent cause of fever, as he has ascertained to be the fact in relation to mercury. Mental derangement he also conceives may sometimes be connected with a morbid state of the same fluid*. From a case reported in the Lancet, No. ccxxxviii., p. 909, it would appear that, in diseases of the spleen and liver, the blood may even acquire an acid quality.]

III. Intrinsic properties of the blood.

As already noticed, the blood has been supposed to be alive: a belief of very high antiquity, and which has been warmly embraced by Dr. Harvey and many others of the first physiologists of modern times. It was a favourite opinion of Mr. John Hunter, and runs through the whole of his doctrines. "That the blood," says he, "has life, is an opinion I have started above thirty years, and have taught it for near twenty of that time in my lectures. It does not, therefore, come out at present as a new doctrine; but has had time to meet with considerable opposition, and acquire its advocates. To conceive that blood is endowed with life while circulating, is, perhaps, carrying the imagination as far as it well can go; but the difficulty arises merely from its being a fluid, the mind not being accustomed to the idea of a living fluid†."

Hence supposed to be alive.

As taught, especially by Mr. J. Hunter.

The experiments and train of reasoning he urges in favour of this opinion, are highly ingenious and peculiarly strong. And, though they may not be demonstrative of a vital and energetic essence separate from the blood itself, but inherent in its substance, and controlling its motions,

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* See Armstrong's Morbid Anatomy of the Bowels, &c. p. 6. 4to. Lond. 1828.

† On Blood, p. 77.

III. Intrinsic properties of the blood.

they seem very clearly to show, that the blood is endowed with peculiar powers; and that, as matter at large is subject to the laws of gravitation, so the matter of the blood is subject to the laws of instinct. We may here add, in favour of Mr. Hunter's opinion, the following two corollaries of Dr. Philip, deduced from a large field of experiments. "The power of the blood-vessels, like that of the heart, is independent of the nervous system.—The blood-vessels can support the motion of the blood after the heart is removed *."

Influenced by the laws of instinct.

Instinct simple life operating by the exercise of its own laws.

Admitting these deductions to be established, the power here referred to, and capable of influencing the blood or the blood-vessels, separately from that of the heart, and of the nervous system, must be the power of simple life, or of instinct, which is simple life operating by the exercise of its own laws.

Living principle according to Pring, in morbid secretions and animal poisons.

This view of the subject has of late, however, been carried by Dr. Pring to an extent far beyond what Mr. Hunter at any time contemplated. For Dr. Pring not only supposes the blood to be alive, and to communicate life to the sentient and healthful parts of the system, but to its insentient and diseased elements as well; and that the matter of animal poisons, derived from the blood, are themselves also living bodies, acting specifically by the vital but discrepant properties they are endowed with. And he thinks that hereby "a distinction may be furnished between the contagious and infectious diseases†."

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* Phil. Trans. 1815, p. 445.

† Principles of Pathology and Therapeutics, &c. By Daniel Pring, M. D. 8vo. 1823.

# CLASS III.

# HÆMATICA.

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## ORDER I.

## PYRECTICA.

### *FEVERS.*

HEAT AND NUMBER OF THE PULSE PRETERNATURALLY AUGMENTED: USUALLY PRECEDED BY RIGOR, AND FOLLOWED BY PERSPIRATION: DURING THE RIGOR, PAINS FIXED OR WANDERING: LASSITUDE: DEBILITY OF MIND AND VOLUNTARY MUSCLES.

Class III. Ord. I. Difficulty of defining fever.

No complaint is so common as fever; none in which mankind, whether professional or laical, are so little likely to be mistaken, and yet none so difficult to be defined. In reality, no writer seems to have been fully satisfied with his own definition; and it is not extraordinary, therefore, that he should seldom have given satisfaction to others. The difficulty proceeds from the complexity of the symptoms, that enter into the character of a fever; the contrariety of many of them to each other in different stages of it; and the occasional absence of some that, in other instances, appear to constitute its leading features. "Febris," says Professor Frank, "certorum potiùs morborum UMBRA, quàm ipse morbus est*."

Difficulty of fixing divisions and generic names.

The nosologist has also two other difficulties of considerable magnitude to contend with in laying down a clear and perspicuous survey of fevers; and that is, their

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* De Curand. Hom. Morb. Epit. i. p. 2. tom. iv. 8vo. Mannh. 1792.

Order I. Pyrectica.

every instance founded upon a principle of correctness and simplification; and consequently calculated to disentangle rather than to add to his incumbrances, and to facilitate his progress in the labyrinth before him. The term Ephemera, is, indeed, well known to every one. Anetus and Epanetus are Greek terms, importing intermittent and remittent, from ἀνίημι and ἐπανίημι. Enecia, from the same tongue, denotes continued action, and is a derivation from ἠνεκής.

Preliminary inquiries necessary to be noticed.

Before, however, we enter upon the practical part of this subject, it appears necessary to make a few remarks upon one or two other questions that have very largely occupied the attention of many pathologists, and especially concerning the proximate and remote causes of fever; and the tendency, which fever has been supposed to evince of terminating suddenly, either favourably or unfavourably, at fixed periods of its progress.

Morbid causes of diseases various.

Proximate and remote causes are rather terms of recent, than of ancient writers. In early times, the causes of diseases chiefly contemplated were PROEGUMENAL or predisponent, and PROCATARCTIC or occasional. Thus, an hereditary taint, or habitual indulgence in high living, may be regarded as a proegumenal cause of gout; and catching cold, or an unusual exertion of muscular exercise, may form its procatarctic cause: both of which are absolutely necessary; for, it is clear, that the latter without the former would not produce the malady; and it is just as clear, that the former might remain harmless in the constitution for years, were it not to meet with the co-operation of the latter, which is often, on this account, denominated an exciting cause. Generally speaking, the first was regarded as an internal, and the second as an external cause; and, in the instance selected, they are so; but, they are not so always.

Proegumenal cause what.

Procatarctic what.

Exciting cause what.

To be acquainted with causes of these kinds is always useful; and, in guarding against the approach of diseases, it is often of the utmost importance: but they give us very little information upon the real nature of diseases, and the mode of managing them when present. And hence another set of causes have been adverted to, and have of late been chiefly studied, and particularly in the case of fever. "That only," says Gaubius, "deserves the name of a phy-

sical cause, which so constitutes the disease, that, when present, the disease exists; while it continues, the disease continues; when changed or removed, the disease is altered or destroyed." It is this which constitutes the PROXIMATE cause, and is, in fact, the essence of the disease, the actual source of all its effects. The REMOTE cause is that, which directly produces the proximate; as a specific virus in syphilis, or a specific miasm in influenza, or epidemic catarrh.

ORDER I. Pyrectica. Proximate and remote causes, what.

In fever we can often trace the remote causes; though we are still too little acquainted with the nature of several of them to be able to restrict them to a specific mode of action; of the proximate cause, we know but very little at present, and it will probably be long before we shall know much more.

Let us, however, begin with the PROXIMATE CAUSE as that, which has most excited the attention of physicians in all ages. Upon this subject, indeed, a great deal of learned dust has been raised, and a great deal of valuable time consumed. Ancient speculations, for they are not entitled to the name of theories, have been overthrown; and modern speculations, in vast abundance, erected upon their ruins; which, in rapid succession, have also had their day and expired. It is an inquiry, therefore, not likely to prove very productive; yet, as forming a part of medical science of which no student should be altogether ignorant, it seems necessary to take a brief survey of the most popular doctrines which have been advanced upon the subject in different ages.

Proximate cause has given rise to various speculations.

Fevers, then, in respect to their proximate cause, have been conjectured to originate from a morbid change, either in the composition of the blood, or in the tone or power of the living fibre. The first view has given rise to various hypotheses, that rank under the common division of the HUMORAL PATHOLOGY. The second has given rise to other hypotheses, appertaining to the common division of the FIBROUS or NERVOUS PATHOLOGY.

Humoral and nervous pathology.

The hypotheses, derived from the one or the other of these sources, that are chiefly entitled to attention, are the following: of which the first two belong to the former division, and the remainder to the latter.

Chief hypotheses that have been offered upon the subject of a proximate cause.

ORDER I. Pyrectica. Proximate cause.

I. That of the Greek schools, founded on the doctrine of a concoction and critical evacuation of morbific matter.

II. That of Boerhaave, founded on the doctrine of a peculiar viscosity, or lentor of the blood.

III. That of Stahl, Hoffman, and Cullen, founded on the doctrine of a spasm on the extremities of the solidum vivum, or living fibre.

IV. That of Brown and Darwin, founded on the doctrine of accumulated and exhausted excitability, or sensorial power.

V. To which we may add that fevers have, by some physiologists, as Dr. Clutterbuck, M. Broussais, and Professor Marcus, been identified with inflammation; and their proximate cause been ascribed to increased action in some particular organ.

I. Hypothesis of concoction: doctrine of the Greek schools.

I. It was the opinion of Hippocrates, that fever is an effort of nature to expel something hurtful from the body, either ingenerated, or introduced from without. Beholding a violent commotion in the system, followed by an evacuation from the skin and kidneys, with which the paroxysm terminated, he ascribed the commotion to a fermentation, concoction, or ebullition, by which the noxious matter was separated from the sound humours; and the evacuation to a despumation or scum which such separation produces, or rather to the discharge of this morbid scum from the emunctories that open externally. Galen supported this view with all the medical learning of his day; and it is the only explanation of fever to be met with in medical writings, through the long course of three thousand years; in fact, till the time of Sydenham, who still adhered to it, and whose pages are full of the language to which it naturally gave birth.

Proximate cause.

Extent of its range.

Blended with the chemistry of the day.

It blended itself almost immediately with the dialect of the chemists of the day, notwithstanding the professed hatred of Paracelsus and Van Helmont towards the whole range of Galenic doctrines, and the solemn pomp with which the former had condemned and burnt the entire works of Hippocrates and Galen. And hence, under the influence of chemistry, at this time assuming a soberer aspect, the supposed animal despumation was contemplated as possessed, according to different circumstances, of dif-

ferent chemical qualities and characters; and particularly as being acid, alkaline, effervescent, or charged with some other acrimonious principle, too highly exalted, or in too great a proportion.

ORDER I. Pyrectica. Proximate cause.

I. Doctrine of concoction.

This doctrine, considered merely hypothetically, is not only innocent, but highly ingenious and plausible. It is in unison with several of the phenomena of pyrectic diseases; and derives a strong collateral support from the general history of exanthems, or eruptive fevers, in which we actually see a peccant matter, producing general commotion, multiplying itself as a ferment, and, at length, separated and thrown off at the surface by a direct depuration of the system.

Highly ingenious and partially correct.

There is no writer, perhaps, in our own day who has carried this view of the subject farther, or even so far as Professor Frank, who regards typhus, plague, petechial and all pestilential fevers, and indeed nervous fevers of every kind, whether continued or remittent, not only as proceeding from specific contagions in the same manner as exanthems, but from contagions producing a like leaven in the system, and matured and thrown off through the various outlets of the body, by the same process of depuration; and hence, after describing all the varieties of malignant nervous fevers under the character of pestilential, he tells us, "non aliter hæc methodus in ipsâ PESTE tum in PESTILENTIALI, sic vocatâ, febre, profuisse visa est: ubi, *maturo satis tempore*, CONTAGII PER CUTEM EXPULSIO solicitè à medentibus absolvebatur*.

How far carried by Frank.

So far however as relates to exanthems, the opinion is sufficiently correct. But, the moment it is brought forward as the proximate cause of fever properly so called, in which there is no specific eruption, it completely fails.

In what respect incorrect.

For first, no explanation is here given as to the means, by which any such concoction or fermentation, or multiplication of morbific matter in any way, takes place. Next, there are many fevers produced evidently by cold, fear, and other excitements, as well mental as corporeal, in which most certainly there is no morbific matter introduced, and wherein we have no reason to conceive there is any

* De Cur. Hom. Morb. Epit. tom. i. p. 130. compare with the § p. 127.

ORDER I. Pyrectica. Proximate cause.

generated internally; while the disease, limited perhaps to a single paroxysm, closes nevertheless with an evacuation from the skin or the kidneys. And, thirdly, we sometimes

I. Doctrine of concoction.

behold fevers suddenly cured, as Dr. Cullen has observed, by a hemorrhage so moderate, as for example a few drops of blood from the nose, as to be incapable of carrying out any considerable portion of a matter diffused over the whole mass of the blood; while we are equally incapable of conceiving, how such diffused morbific matter could collect itself at a focal point, or pass off at a single outlet; or of tracing in the discharge, after the minutest examination, any properties different from those of blood in a state of full health.

Sometimes followed by an injurious practice.

I have observed, that this hypothesis is, however, harmless enough when merely brought forward as a speculation. But it has not always been limited to this point; for it has occasionally been advanced as a practical and efficient principle; and the febrile commotion, and particularly the hot fit, has, in treating the disease, been purposely increased, with a view of assisting nature in her curious but unknown process of expelling the peccant material; and the most dangerous consequences have followed.

II. Lentor in the blood or doctrine of Boerhaave.

II. The acute and penetrating mind of Boerhaave, who was born in 1668, was sufficiently sensible of this danger; and the discoveries, which were now taking place in chemistry and physiology, led him progressively to the construction of a new theory, which in a few years became so popular as to obtain a complete triumph over that of the Greek schools.

Whence derived.

Leeuwenhoeck, by a delicate and indefatigable application of the microscope to animals of a transparent skin, had endeavoured to establish it as a fact, that the constituent principles of the blood consist of globular corpuscles; but, that these corpuscles differ in size in a regular descending series according to the constituent principles themselves; and that each set of principles has its peculiar blood-vessels, possessing a diameter just large enough to admit the globules that belong to it, and consequently incapable, without force, of allowing an entrance of those of a larger magnitude; and hence, that the blood-vessels possess a descending series as well as the particles of the blood.

It was upon this supposed fact, that Boerhaave built his

hypothesis. He conceived that almost all diseases may be resolved into an introduction of any given series of particles of blood into a series of vessels to which they do not properly belong; and he distinguished such introduction by the name of *error loci*. He conceived still farther, that this heterogeneous admixture is very frequently taking place; and that its chief cause consists in a disproportion of one or more sets of the sanguineous principles to the rest, by which their globular form is occasionally broken down or agglutinated; and hence rendered too thin and serous, or too gross and viscid. The viscidity of the blood he distinguished by the name of LENTOR; and to a prevalence of this lentor, or viscidity, he ascribed the existence of fever; maintaining that the general disturbance, which constitutes fever, proceeds from an ERROR LOCI of the viscid blood, whose grosser corpuscles, from their undue momentum as well as superabundance, press forcibly into improper series of vessels, and stagnate in the extremities of the capillaries, whence the origin of the cold stage, and consequently of the stages that succeed it, to which the cold stage gives rise*; and hence those medicines, which were supposed capable of dissolving that tenacity, or breaking down the coalescence of such a state of the blood, were denominated DILUENTS, HUMECTANTS, and ATTENUANTS, whilst those of an opposite character were called INSPISSANTS: terms which have descended to our own day, and are still retained, even by those who pay little attention to the hypothesis that gave them birth.

ORDER I. Pyrectica. Proximate cause. II. Lentor in the blood. How applied. *Error loci*, what. Medical nomenclature hence influenced.

The system of Boerhaave, therefore, consisted of an elegant and artful combination of both the earlier and later doctrines of corpuscular physiology. Without deserting the humoral temperaments of Galen, or the constituent elements and elective attractions of the alchemists, he availed himself of the favourite notions of the corpuscular pathologists, their points or stimuli, their frictions, angles, and spherules, derived from the Cartesian philosophy, which was now exercising as triumphant a sway over the animal as over the material system; and interwove the

An elective system combining parts of many others.

* Aph. 756. Comment. Van Swiet. tom. ii. p. 528. edit. Lugd. Bat. 4to. 1745.

ORDER I. Pyrectica. Proximate cause.

II. Lentor in the blood.

whole into an eclectic scheme, so plausible and conciliatory, that all parties insensibly felt themselves at home upon it, and adopted it with ready assent. In the emphatic language of M. Quesnay, it was "LA MEDECINE COLLECTIVE."

Fact in favour of the hypothesis, but unavailable.

The most triumphant fact, in favour of the Boerhaavian hypothesis, is, that the crust on the blood in inflammations, and cauma or inflammatory fever, is often found peculiarly dense. But, as fevers (and certainly the greater number) are found without any crust; and as a similar crust, though, perhaps, not quite so dense, exists under other and very different states of body, as in pregnancy and scurvy (porphyra), even this leading appeal has long lost its power of conviction: whilst the abruptness, with which fevers make their assault, from sudden occasional causes, and in constitutions of every diversity, forbid the supposition, that, in such cases, a lentor or sizy crasis of the blood, and especially a *glutinosum spontaneum* can have time to be produced, however it may exist occasionally, and be, perhaps, the source of other disorders. The subject, however, has of late been again taken up by Dr. Storker of Dublin, with a view of reviving the humoral pathology in its more important doctrines, and of extending the arguments, which have hitherto been urged in its favour*.

III. Spasm of the extreme vessels, or doctrine of Stahl, Hoffman, and Cullen.

III. To the period of Boerhaave, in the production of fever and indeed of all other diseases, the human body was regarded as almost entirely passive, a mere organic machine, operated indeed upon by some AUTOCRATEIA, as NATURE, or a VIS MEDICATRIX, but in the same manner as other machines, and mostly by similar laws. Its muscles were contemplated as mechanical levers, and its vessels as hydraulic tubes, whose powers were calculated upon the common principles of mechanics and hydrodynamics; and were only supposed to be interfered with by the internal changes perpetually taking place in the fluids they had to convey. A new era, however, at length began to draw upon the world: a more comprehensive spirit to pervade medical study: the animal frame was allowed to exhibit

* Pathological Observations, &c. Dublin, 8vo. 1823. See also Armstrong's Morbid Anatomy of the Bowels, &c. p. 6, et seq. 4to. Lond. 1828.

pretensions superior to the inanimate, and not only to be governed by powers of its own, but by powers, which are continually and systematically from a given point operating to a preservation of health where it exists, and to a restoration of health where it has been lost or injured. Stahl, who was contemporary with Boerhaave, and in the university of Halle in 1694, first started this loftier and more luminous idea,—more luminous, though the light was still struggling with darkness; made the mind the controlling principle, and the solidum vivum, or nervous system, the means by which it acted. Fever, on his hypothesis, consisted in a constrictive or *tonic spasm*, in his own language *spasmus tonicus*, produced by a torpor or inertness of the brain, at the extremity of the nerves, and counteracted by the remedial exertions of the mind, the vires medicatrices of his hypothesis, labouring to throw off the assailing power; whence the general struggle and commotion, by which the febrile paroxysm is characterized. Hoffman, who was a colleague of Stahl, took advantage of this new view; followed up the crude and primary ideas of Stahl with much patient and laborious investigation; and soon presented to the world a more correct system, in a more attractive style; but, apparently, with a disingenuous concealment of the source, from which he had borrowed his first hints. He omitted the metaphysical part of the Stahlian hypothesis; took from the mind the conservative and remedial power over the different organs, with which Stahl had so absurdly endowed it; seated this power as a law of life in the general organization; separated the nervous from the muscular fibres, the latter of which were regarded as only the extremities of the former by Stahl; allowed a wider range and longer term to the constrictive spasm of fever; and changed its name from *spasmus tonicus* to *spasmus peripheric us**: giving also to the moving power of the muscular, or irritable fibres the name of *vis insita*, as that of the nervous fibre was called *vis nervea*.

ORDER I. Pyrectica. Proximate cause.

III. Spasm of the extreme vessels.

Era and progress of Stahl.

Explanation of his hypothesis.

Followed up and improved by Hoffman.

Hoffman's hypothesis, how distinguished from Stahl's.

It is highly to the credit of Boerhaave that his mind, in the latter part of his life, was so fully open to the merits

Ingenuousness of Boerhaave.

* Med. Nat. Systemat. tom. iii. § 1. cap. 4. Bochmer, Diss. de Spasmi Peripherici signo in febribus continentibus. Hal. 1765.

Order I. Pyrectica. Proximate cause.

III. Spasm of the extreme vessels.

of this hypothesis, that he admitted the agency of the nervous power, though a doctrine that struck at the root of his own system, of which we have a clear proof in the change which occurs in the fourth edition of his Aphorisms, and particularly aphorism 755, where he lays down the proximate cause of intermitting fevers. Hitherto it had run thus: "unde post accuratum examen totius historiæ intermittentium causa proxima constituitur viscositas liquidi arteriosi." But to this, in the edition before us, is added the following: "forte et nervosi (liquidi) tam cerebri, quam cerebelli cordi destinati, inertia*."

Ingenuousness of Gaubius.

It is also equally creditable to the learned Gaubius, that, though strongly attached to the Boerhaavian school, in which he was educated, and a zealous contender for many of its doctrines, his understanding was alike open to the clearer and simpler views of the chemists of the day, upon various points not yet generally adopted, and allowed him to become a more thorough convert to their philosophy. The reader may judge of this change in his mind by the following passage: "An et naturæ humanæ facultas inest, moleculas, acris detritas aut intropressas angulis, in sphærulas tornando, blanditium creandi? Non satis constat speciosam ideam æqualiter in fluidam solidamque acrimoniam quadrare.—Credibilius profectò mixtione chemica magis quam mechanica rotundatione, id opus perfici†."

General inclination to the same views long in previous existence.

In effect, there not only was at this time, but had been for many years antecedently, a general feeling among the cultivators of medicine, that neither the laws of animal chemistry, nor of the living fibre, had been sufficiently studied for the purposes of a correct pathology: in proof of which it may be sufficient to refer to various articles on both subjects, inserted in the Ephemerides Naturæ Curiosorum, published at Frankfort, in 1684; and the writings of

Baglivi, Willis, Gilchrist.

Baglivi ‡, and Dr. Willis §; and still more particularly to Dr. Gilchrist's elaborate treatise on nervous fevers ‖; who, following up the hint thrown out by Boerhaave in the aphorism just quoted, endeavours to show how well the two

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* De Motû Tonico. Theoria Medica vera. Halle, 1734.

† Pathol. § 298—300. ‡ Specimen de Fibrâ Motrici et Morboso.

§ Pathologia Cerebri et Nervorum.

‖ Edin. Med. Trans. vol. iv. art. xxiii. and vol. v. part ii. art. xlviii.

ideas of lentor and spasm are disposed to amalgamate in forming the proximate cause of fever; the spasm consisting of an universal muscular tension, and the lentor being united according to the nature of the case with inflammation, acrimony, or both; and hence often producing, what he denominates, an alternate NISUS and RENISUS.

ORDER I. Pyrectica. Proximate cause. III. Spasm of the extreme vessels.

The materials, however, were now becoming too unwieldy; and the wheels of the machine were clogged by the very forces that were designed to increase its motion. Dr. Cullen was well aware of this, and boldly ventured upon a new attempt for the purpose of simplifying and facilitating its progress. For his basis he took the hypothesis of Stahl, as modified and improved by Hoffman: and on this basis erected his stately and elaborate structure, so well known to the medical world, full of ingenuity and daring genius, and which, if it be at this moment crumbling into decay, certainly is not falling prostrate before any fabric of more substantial materials, or more elegant architecture. Dr. Cullen has been accused of the same want of ingenuousness towards Hoffman, as Hoffman is chargeable with towards Stahl; and of having introduced his system to the public with little or no acknowledgment of the sources from which he has drawn. But, surely, no one can bring forward such an accusation, who has read with any degree of attention the preface to his Practice of Physic, in which he gives a full account of Dr. Hoffman's system in his own words, and pays complete homage to his merits.

Cullen's modification in the formation of a new system. Its high merit.

According to the more elaborated principles of the Cullenian system, the human body is a congeries of organs, regulated by the laws not of inanimate matter, but of life, and superintended by a mobile and conservative power or energy seated in the brain, but distinct from the mind or soul; acting *wisely* but *necessarily*, for the general health; correcting deviations and supplying defects, not from a knowledge and choice of the means, but by a pre-established relation between the changes produced and the motions required for the restoration of health; and operating, therefore, through the medium of the moving fibres, upon whose healthy or unhealthy state depends the health or unhealthiness of the general frame: which fibres he

System explained.

ORDER I. Pyrectica. Proximate cause.

regarded, with Stahl, as simple nerves, the muscular filaments being nothing more than their extremities, and by no means possessed of an independent vis insita.

III. Spasm of the extreme vessels.

The brain therefore, upon this hypothesis, is the primum mobile, but it closely associates in its action with the heart, the stomach, and the extreme vessels. The force of the heart gives extension to the arteries, and the growth of the body depends upon such extension, in conjunction with the nutritious fluid furnished by the brain, and deposited by the nerves in the interstices of their own fibres; the matter of which fibres is a solid of a peculiar kind, whose parts are united by chemical attraction. All nervous power commences in the encephalon; it "consists in a motion beginning in the brain and propagated from thence into the moving fibres, in which a contraction is to be produced. The power by which this motion is propagated we name," says Dr. Cullen, "the ENERGY of the brain; and we therefore consider every modification of the motions produced, as modifications of that energy*." He further lays it down as a law of the economy, that the energy of the brain is alternately excited and collapsed, since every fibrous contraction is succeeded by a relaxation: whence spasms and convulsions are *motus abnormes*, and consist in an irregularity of such alternation. But we must distinguish in this system between the energy of the brain and the vital fluid it sends forth by the nerves; for, while the former rises and sinks alternately, the latter remains permanently the same. It is not a secretion, but an inherent principle, never exhausted, and that never needs renewal†.

Close association of brain, stomach, and extreme vessels.

Energy of the brain, what.

Alternately excited and collapsed.

Nervous fluid not a secretion.

This hypothesis, in its various ramifications, influenced every part of his theory of medicine, and consequently laid a foundation for his doctrine of fever. The proximate cause of fever was, in his opinion, a collapse or declination of the energy of the brain, produced by the application of certain sedative powers, as contagion, miasm, cold, and fear, which constitute the remote causes. This diminished energy extends its influence over the whole system, and occasions an universal debility; but chiefly over the ex-

Fever hence accounted for.

Cullen's proximate cause of fever.

* Mat. Med. part ii. chap. viii. 349.

† Ibid. part ii. chap. vi. p. 223.

treme vessels, on which it induces a spasm; and in this spasm the cold fit is supposed to consist.

ORDER I. Pyrectica. Proximate cause.

"Such, however," to adopt the words of Dr. Cullen himself, "is the nature of the animal economy, that this debility proves an indirect stimulus to the sanguiferous system; whence, by the intervention of the cold stage, and spasms connected with it, the action of the heart and larger arteries is increased, and continues so till it has had the effect of restoring the energy of the brain, of extending this energy to the extreme vessels, of restoring therefore their action, and thereby especially overcoming the spasm affecting them; upon the removing of which, the excretion of sweat, and other marks of the relaxation of the excretories take place*."

III. Spasm of the extreme vessels.

Energy of the brain restored by debility.

This relaxed or perspiratory section of the paroxysm, however, is not regarded by Dr. Cullen as a part of the disease, but as the prelude to returning health. Yet the fit still consists of three stages: the first, of debility or diminished energy; the second, of spasm, and the third of heat. And though Dr. Cullen had some doubts whether the remote cause of fever might not produce the spasm, as well as the atony of the nervous system, yet he inclined to ascribe the second stage to the operation of the first, as he did most decidedly the third to that of the second: and thus to regard the whole as a regular series of actions, employed by the vis medicatrix naturæ for the recovery of health.

Division of the paroxysm into three stages, not including that of sweat.

That fever, in its commencement, or earliest stage, is characterized by debility of the living fibre, or, more closely in the words of Dr. Cullen, by diminished energy of the brain, extending directly or indirectly to the voluntary muscles and capillaries, and producing the *signa prodroma* of Professor Frank†, cannot for a moment be doubted by any one who accurately watches its phenomena. And thus far the Cullenian hypothesis is unquestionably correct; as it appears to be also in supposing the cold stage to be the foundation of the hot, and of the excretion of sweat, by which the hot stage is succeeded; the entire series forming Frank's *signa constitutiva*. But it fails in the

System how far correct.

In what respect it fails.

* Prac. of Phys. § xlvi.

† De Curand. Hom. Morb. tom. i. p. 3. 8vo. Mannh. 1792.

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two following important points, without noticing a few others of smaller consequence. The spasm on the minute vessels, produced by debility, takes the lead in the general assault; and, though it forms only a link in the remedial process, is the most formidable enemy to be subdued; and hence, all that follows in the paroxysm is an effort in the system to overcome this spasm. The effort at length proves successful, the debility yields to returning strength, the spasm is conquered, and the war should seem to be over. But this is not the fact: the war continues notwithstanding; there is nothing more than a hollow truce; debility and spasm take the field again, and other battles remain to be fought. There is nothing in this hypothesis to account for a return of debility and spasm after they have been subdued; nor to show why spasm should ever in the first instance be a result of debility. "In this system," says Dr. Parr, "the production of spasm by debility is an isolated fact without a support; and the introduction of the vires medicatrices naturæ is the interposition of a divinity in an epic, when no probable resource is at hand."

III. Spasm of the extreme vessels.

Febrile paroxysms not accounted for after the first.

Error in making debility a cause of strength.

The next striking defect is, that debility is here made a cause of strength; the weakened action of the first stage giving rise to the increased action and re-excited energy that restore the system to a balance of health: and here again we stand in need of the interposition of some present divinity to accomplish such an effort by such means.

IV. Accumulated or exhausted excitability.

IV. It is not, therefore, to be wondered at, that this system, with all its ingenuity and masterly combination, should not have proved satisfactory to every one. In reality, it did not for many years prove satisfactory to every one in the celebrated school in which it was first propounded. And hence, under the plastic hands of Dr. Brown arose another hypothesis, of which I shall proceed to give a very brief outline, together with the modification it received under the finishing strokes of Dr. Darwin.

Excitability, or doctrine of Brown.

Rise of Dr. Brown and his hypothesis.

Dr. Brown, who was at first a teacher of the classics at Edinburgh, and a translator of inaugural theses into Latin, commenced the study of medicine about the middle of life, by a permission to attend the medical schools gratuitously. He was at first strongly attached to Dr. Cullen and Dr. Cullen's system; but an altercation ensued, and he felt an equal animosity towards both. A new and

opposite system, if so it may be called, was in consequence manufactured and publicly propounded in a variety of ways. It had great simplicity of principle, and some plausibility of feature; it attracted the curious by its novelty, the indolent by its facility, and every one by the boldness of its speculations. It circulated widely, and soon acquired popularity abroad as well as at home.

ORDER I. Pyrectica. Proximate cause. IV. Accumulated or exhausted excitability. Its simplicity and plausibility.

Man, according to Dr. Brown, is an organized machine, endowed with a principle of excitability, or predisposition to excitement, by means of a great variety of stimuli, both external and internal, some of which are perpetually acting upon the machine; and hence the excitement which constitutes the life of the machine is maintained. Excitability, therefore, is the nervous energy of Dr. Cullen; and, like that, is constantly varying in its accumulation and exhaustion: yet not, like the nervous energy of Dr. Cullen, under the direction and guidance of a vis conservatrix et medicatrix naturæ, distinct from the matter of the organization itself, but passively exposed to the effect of such stimuli as it may chance to meet with, and necessarily yielding to their influence.

Hypothesis explained. Excitability alternately accumulated and exhausted.

Upon this hypothesis excitement is the vital flame, excitability the portion of fuel allotted to every man at his birth, and which, varying in every individual, is to serve him without any addition for the whole of his existence: while the stimuli by which we are surrounded are the different kinds of blasts by which the flame is kept up. If the fuel, or excitability, be made the most of, by a due temperature or mean rate of blasts or stimuli, the flame or excitement may be maintained for sixty or seventy years. But its power of supporting a protracted flame may be weakened by having the blast either too high or too low. If too high, the fuel or excitability will, from the violence of the flame, be destroyed rapidly, and its power of prolonging the flame be weakened directly; and, to this state of the machine Dr. Brown gave the name of indirect debility, or exhausted excitability. If the blasts or stimuli be below the mean rate, the fuel, indeed, will be but little expended, but it will become drier and more inflammable; and its power of prolonging the flame will be still more curtailed than in the former case; for half the blast that would be required to excite rapid destruction antecedently,

Farther illustrated.

ORDER I. Pyrectica. Proximate cause.

will be sufficient to excite the same effect now. This state of the machine, therefore, the author of the hypothesis contra-distinguished by the name of direct debility, or accumulated excitability.

IV. Accumulated or exhausted excitability.

Upon these principles he founded the character and mode of treatment of all diseases. They consist but of two families, to which he gave the name of sthenic and asthenic; the former produced by accumulated excitability, and marked by direct debility; the latter occasioned by exhausted excitability, and marked by indirect debility. The remedial plan is as simple as the arrangement. Bleeding, low diet, and purging, cure the sthenic diseases; and stimulants of various kinds and degrees, the asthenic.

Doctrine of fevers, how divided and treated.

Fevers, therefore, under this hypothesis, like other diseases, are either sthenic or asthenic: they result from accumulated or exhausted excitability. Synocha, or inflammatory fever (cauma under the present arrangement), belongs to the first division, and typhus to the second. Let us try the system by these examples.

Wherein the hypothesis fails.

The first symptoms of inflammatory fever, like those of all others, evince, as I have already observed, debility or languid action in every organ, let the debility be distinguished by whatever epithet it may. The vital flame is weak, and scarcely capable of being supported; and yet the fuel is more inflammable than in a state of health; the excitability is accumulated. This scheme, therefore, completely fails in accounting for the origin or first stage of inflammatory, or, in Dr. Brown's own language, sthenic fever.

In respect to inflammatory fever.

In respect to typhus.

Typhus pestilens, or jail-fever, is arranged by Dr. Brown as an asthenic disease; and, as such, we have reason to expect debility, as characteristic of its entire progress. Yet, what is it that produces this debility? The blast or stimulus is here contagion; and the excitability is exhausted by the violence of this blast or stimulus; but there is no means of its becoming exhausted without increasing the excitement: the fuel can only be lessened by augmenting the flame that consumes it. Yet in typhus, according to this hypothesis, the fuel is expended, not in proportion as the flame is active and violent, but in proportion as it is weak and inefficient. The excitability is exhausted, and the debility increases in proportion as the excitement for-

bears to draw upon it for a supply. The blast blows hard, but without raising the fire, and yet the fuel consumes rapidly. This scheme, therefore, completely fails in accounting for any stage of low or asthenic fevers of every description.

ORDER I. Pyrectica. Proximate cause. IV. Accumulated or exhausted excitability.

Dr. Brown, however, was not a man of much practice; his writings show that he was but little versed in the symptoms of diseases; his descriptions are meagre and confused: and hence, when he comes to assort diseases into the only two niches he allots for their reception, he makes sad work; and maladies of the most opposite characters, and demanding the most opposite mode of treatment, are huddled together to be treated in the same manner, in many cases with no small risk to the patient. Thus, among the sthenic diseases are associated rheumatism, erysipelas, scarlet and inflammatory fever; and, among the asthenic, gout, typhus, apoplexy, and dropsy.

Inadequacy of Brown's descriptions and arrangement.

Opposite diseases united.

The Brunonian hypothesis, nevertheless, offers one principle that is unquestionably founded on fact, and is peculiarly worthy of attention; I mean, that of accumulated excitability from an absence or defect of stimuli; in colloquial language, an increase of energy by rest. And it is this principle, which forms the hinge on which turns the more finished system of Dr. Darwin.

One principle worthy of notice.

Hypothesis of Dr. Darwin.

Sensible of the objection that weighs equally against that part of the system of Dr. Cullen and Dr. Brown, which represents the energy or excitability of the living frame as capable of recruiting itself after collapse or exhaustion, without a recruiting material to feed on; he directly allows the existence of such a material; regards it as a peculiar secretion, and the brain as the organ that elaborates and pours it forth. The brain, therefore, in the system of Dr. Darwin, is the common fountain from which every other organ is supplied with sensorial fluid, and is itself supplied from the blood, as the blood is from the food of the stomach.

Spirit of animation modified, doctrine of Cullen.

All this is intelligible; but when, beyond this, he endows his sensorial fluid with a mental as well as a corporeal faculty, makes it the vehicle of ideas as well as of sensation, and tells us, that ideas are the actual "contractions, or motions, or configurations, of the fibres which constitute

Improvement upon Brown: but chargeable with materialism.

ORDER I. Pyrectica. Proximate cause.

the immediate organ of sense*," he wanders very unnecessarily from his subject, and clogs it with all the errors of materialism.

IV. Accumulated or exhausted excitability.

He supposes the sensorial power, thus secreted, to be capable of exhaustion in four different ways, or through four different faculties of which it is possessed: the faculty

Doctrine explained.

of IRRITABILITY, exhausted by external stimuli affecting simple irritable fibres: that of SENSIBILITY, exhausted by stimuli, affecting the fibres of the organs of sense: that of VOLUNTARITY, exhausted by stimuli affecting the fibres of the voluntary organs, acting in obedience to the command of the will; and that of ASSOCIABILITY, exhaused by stimuli affecting organs associated in their actions by sympathy or long habit. By all, or any of these means, the sensorial power becomes evacuated, as by food and rest it becomes replenished, often, indeed, with an accumulation or surplus stock of power.

How applied to fever.

In applying this doctrine to fever, he considers its occasional causes, whatever they may be, as inducing a quiescence or torpor of the extreme arteries, and the subsequent heat as an inordinate exertion of the sensorial power hereby accumulated to excess; and, consequently, the fever of Dr. Darwin commences a stage lower than that of Dr. Cullen, or in the cold fit instead of in a collapse of the nervous energy lodged in the brain.

Fails in accounting for the entire paroxysm.

Now, allowing this explanation to account for the cold and hot stages of a single paroxysm of fever, like the spasm of Dr. Cullen, it will apply no farther. For when the sensorium has exhausted itself of its accumulated irritability, the disease should cease. It may, perhaps, be said, that a second torpor will be produced by this very exhaustion, and a second paroxysm must necessarily ensue. Admitting this, however, for a moment, it must be obvious that the first or torpid stage only can ensue; for the system being now quite exhausted, the quiescence that takes place during the torpor can only be supposed to recruit the common supply necessary for health; we have no reason to conceive, nor is any held out to us, that this

* Zoonom. vol. i. sect. II. ii. 7.

quantity can again rise to a surplus. Yet it must be farther remarked, that, in continued fevers, we have often no return of torpor or quietude whatever, and, consequently, no means of re-accumulating irritability; but one continued train of preternatural action and exhaustion, till the system is completely worn out. And to this objection, the Darwinian hypothesis seems to be altogether without a reply. ORDER I. Pyrectica. Proximate cause. IV. Accumulated or exhausted excitability. Fails in accounting for continued fever.

It is not necessary to pursue this subject farther. Other conjectures, more or less discrepant from those now examined, have been offered: but, they have not acquired sufficient notice, nor evinced sufficient ingenuity to be worthy of examination.

V. Other pathologists have referred the proximate cause of fever to a morbid affection of some particular organ, or set of organs, associated in a common function. Thus, Baron Haller alludes to several in his day, who ascribed it to a diseased state of the vena cava*: Bianchi pitched upon the liver†, Swalve on the pancreas‡, Rahn on the digestive organization generally §. Professor Frank has divided the different kinds of fever between the digestive organs, the arteries, and the nerves, each in a particular state of diseased action; so that with him all fevers are nervous, inflammatory, or gastric‖. The Italian pathologists eagerly caught up this view, and modified it in various ways; and Broussais has of late given it another modification, by placing fever in the mucous membrane of any of the viscera, but chiefly in the mucous membrane of the digestive canal; and consequently gastric fever, with Broussais, takes the lead of all the rest both in variety and vehemence of action: the particular character or intensity of the fever being resolvable into the temperament, idiosyncrasy, or other circumstances of the individual¶. Dr. Clutterbuck has still more lately in our own country, and with far more reason and learning, brought forward the brain instead of the stomach; to an inflammation of which organ he ascribes fevers of every kind, regarding them V. Proximate cause placed in some local disease. Vena cava. Liver. Pancreas. Doctrine of Frank; of Broussais. Inflamed brain, doctrine of Clutterbuck.

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* Bibl. Med. Pr. I. p. 112.
† Hist. Hepat. p. 112.
‡ Pancreas, &c. p. 141.
§ Briefwechsel, Band. I. p. 150.
‖ De Cur. Morb. Hom. Epitome, tom. v. 8vo. Mannh. 1792-4.
¶ Examen des Doctrines Médicales, et des Systêmes de Nosologie, &c. Par F. J. V. Broussais, D. M. 8vo. 1821.

ORDER I. Pyrectica. Proximate cause. V. Organic disease. Fevers hereby confounded with inflammation.

merely as so many varieties of one specific disease, originating from this one common cause*. But this is to confound fever with local inflammation, the idiopathic with the symptomatic affection. In treating of inflammation under the ensuing Order, we shall have sufficient opportunities of seeing, that an inflamed state of almost any organ, and especially of membranous organs, or the membranous parts of organs, is sufficient to excite some degree of fever or other, and not unfrequently fever of the highest degree of danger from its duration or violence. And hence, the liver, the lungs, the stomach, the intestines, the peritonæum, and the brain, have an equal claim to be regarded as furnishing a proximate cause of fever when in a state of inflammation.

Fevers identified with inflammations by Marcus.

A very striking objection to Dr. Clutterbuck's hypothesis, is his limiting himself to a single organ as the cause of an effect, which is equally common to all of them. And on this ground it is, that Professor Marcus of Bavaria, who has contended with similar strenuousness, for the identity of fever and inflammation, has regarded all inflamed organs as equal causes; and is hereby enabled to account, which Dr. Clutterbuck's more restricted view does not so well allow of, for the different kinds of fever that are perpetually springing before us, one organ giving rise to one, and another to another. Thus, inflammation of the brain, according to Dr. Marcus, is the proximate cause of typhus; inflammation of the lungs, of hectic fever; that of the peritonæum, of puerperal fever; and that of the mucous membrane of the trachea, of catarrhal fever: a view, which has lately been adopted by several French writers of considerable intelligence, as an improvement upon the hypothesis of Broussais†.

Objections to an identification of inflammation and fever.

The general answer, however, to pathologists of every description who thus confound or identify fever with inflammation, whether of a single organ or of all organs equally, is, that, though fever is commonly a symptom or sequel of inflammation, inflammation is not uncommonly a

* Treatise on Fever, 8vo.

† M. Gaultier de Clanbry, vide Journ. Gen. de Médecine, Avr. 1823, and M. Tacheron, Recherches Anatomico-Pathologiques sur la Médecine Pratique, &c. 8vo. 3 tomes, Paris, 1823.

symptom or sequel of fevers. And hence, though post-obit examinations, in the case of those who have died of fever, should show inflammation in the brain, the liver, or any other organ, it is by no means a proof, that the disease originated there, since the same appearance may take place equally as an effect, and as a cause. Whilst a single example of fever terminating fatally, without a trace of inflammation in any organ whatever, and such examples are perpetually occurring, is sufficient to establish the existence of fever as an idiopathic malady, and to separate the febrile from the phlogotic divisions of diseases.

ORDER I. Pyrectica. Proximate cause. V. Organic disease.

"A fever, therefore," to adopt the language of Dr. Fordyce, "is a disease that affects the whole system; it affects the head, the trunk of the body, and the extremities; it affects the circulation, the absorption, and the nervous system; it affects the skin, the muscular fibres, and the membranes; it affects the body, and affects likewise the mind. It is, therefore, a disease of the whole system in every kind of sense. It does not, however, affect the various parts of the system uniformly and equally; but, on the contrary, sometimes one part is much affected in proportion to the affection of another part*."

Fever as described by Fordyce.

The result of the whole, as observed at the outset of this introduction, is that we know little or nothing of the proximate cause of fever, or the means, by which its phænomena are immediately produced. In the language of Lieutaud, applied to the subject before us, they are too often âtra caligine mersæ; nor have any of the systems hitherto invented to explain this recondite inquiry, however ingenious or elaborate, answered the purpose for which they were contrived.

General result. Proximate cause little known.

From the proximate cause of fever, let us next proceed to a few remarks upon its REMOTE causes.

Remote causes of fever.

Dr. Cullen, who has striven so strongly and so ingeniously to simplify the former, has made a similar attempt in respect to the latter. He first resolves all remote causes into debilitating or sedative powers, instead of being stimulant as they were formerly very generally considered, and as they are still regarded by many pathologists, and

Regarded by Cullen as sedative powers.

* On Fever, Dissert. 1. p. 28.

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especially by those, who contemplate fever and inflammation as identic. Whether this position of Dr. Cullen be correct or not, it was necessary for him to lay it down and to maintain it, or he must have abandoned his system of fever altogether, which supposes it to commence in, and be primarily dependent upon debility.

Marsh and human effluvia remote causes.

These sedative or debilitating causes he reduces to two: MARSH and HUMAN effluvia. To the former of which he limits the term miasmata, and the power of producing intermittent fevers, which, with him, include remittent; while, to the latter, he confines the term contagions, and the power of producing continued fevers. It is true, he has found himself compelled to take notice of a few other powers, as cold, fear, intemperance in venery or drinking; but these he is disposed to regard as little or nothing more than sub-agents, or co-agents, scarcely capable of producing fever by themselves.

Auxiliary remote causes of Cullen.

" Whether fear or excess be alone," says he, " the remote cause of fever, or if they only operate either as concurring with the operation of marsh or human effluvia, or on giving an opportunity to the operation of cold, are questions not to be positively answered; they may possibly of themselves produce fever: but, most frequently, they operate as concurring in one or other of the ways above mentioned *." To cold, however, he attributes a power of engendering fever more freely than to the rest; " yet even this," says he, " is commonly only an exciting cause, concurring with the operation of human or marsh effluvia †."

Sufficient weight not allowed to them.

We shall find, as we proceed, that these complemental causes may admit of addition; as we shall also, that they more frequently exist as independent agents, than Dr. Cullen is disposed to allow. Yet, there can be little doubt, that the chief and most extensive causes of fever are human and marsh effluvia.

Distinction between marsh and human effluvia of no great benefit.

No great benefit, however, has resulted from endeavouring to draw a line of distinction between these two terms, and hence it is a distinction which has been very little attended to of late years. *Miasm* is a Greek word,

* Pract. of Phys. book I. chap. IV. sect. XCVII.

† Ibid. book I. chap. IV. sect. XCII.

importing pollution, corruption, or defilement generally; and *contagion*, a Latin word, importing the application of such miasm or corruption to the body by the medium of touch. Hence there is neither parallelism, nor antagonism, in their respective significations: there is nothing that necessarily connects them, either disjunctively or conjunctively. Both equally apply to the animal and the vegetable worlds—or to any source whatever of defilement and touch; and either may be predicated of the other; for, we may speak correctly of the miasm of contagion, or of contagion produced by miasm.

ORDER I. Pyrectica. Remote causes. Miasm and contagion, what.

And hence the latter term is equally applied by Sauvages to both kinds of effluvia: "Miasmata, tùm sponte in sanguine enata tùm extus ex aëre, in massam sanguineam delata*."

Miasm how applied by Sauvages.

In a work of practical information, it is hardly worth while to follow up the refinements of those writers, who deny, and endeavour to disprove, the existence of contagion under any form or mode of origin†. Such speculations may be ingenious and very learned and find amusement for a leisure hour in the closet; but, they will rarely travel beyond its limits, and should they ever be acted upon, would instantly destroy themselves.

The denial of contagion hardly worth attending to.

It is a question of more importance, whether we have yet the means of realizing the distinction between human and marsh miasmata‡, which Dr. Cullen has here laid down, and which has been generally adopted from the weight of his authority. All specific miasmata may be regarded as morbid ferments, capable of suspension in the atmosphere, but varying very considerably in their degree of volatility, from that of the plague, which rarely quits the person except by immediate contact, to that of the spasmodic cholera of India, which works its way, if it be really from a specific poison, in the teeth of the most powerful monsoons, despising equally all temperatures of the atmosphere and all salubrities of district, and travel-

All miasmata morbid ferments,

* Nosol. Method. Cl. II. Febr. Theor. sect. 79.

† Lassis Recherches sur les véritables Causes des Maladies Epidemiques appellées Typhus, ou de la Non-contagion des Maladies Typhoides, &c. 8vo. Paris, 1813. Maclean's Results of an Investigation respecting Epidemic and Pestilential Diseases, &c. 2 vols. 8vo. 1817-1818.

‡ Johnson, Influence of Tropical Climates, &c. pp. 20, 21. 3d edit. 1822.

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ling with the rapidity of the fleetest epidemy. They are of various kinds, and appear to issue from various sources, but we can only discriminate them by their specific effects. These are most clearly exemplified in the order of exanthems: in which for some thousands of years they have proved themselves to be of a determined character in all parts of the world where they have been the subject of observation, differing only in circumstances that may be imputed to season, climate, and other external causes, or to the peculiar constitutions of the individuals affected. Thus, the miasm of small-pox has uniformly continued true to small-pox, and that of measles, to measles; and neither of them has, in a single instance, run into the other disease, or produced any other malady than its own.

Remote causes.

of various kinds and from various sources.

Those of exanthems distinct and specific.

Those of marsh and human effluvia not equally so;

But, can we say the same of the supposed two distinct miasms of marsh and human effluvia? Is it equally true, that the former has never produced any other than intermittent fever, or the latter any other than continued? And is it also equally true, that each of these maladies adheres as strictly to its own character in every age, and every part of the world, as small-pox and measles; and that they have uniformly shown as strong an indisposition to run into each other? Dr. Cullen's system is built upon an affirmative to these questions. For it, in fact, allows but two kinds of fever, each as distinctly proceeding from its own specific miasm as any of the exanthems.

but supposed so in Cullen's system.

The supposition contradicted by daily facts.

But this is to suppose what is contradicted by the occurrences of every day: which compel us to confess, that, while we cannot draw a line of distinction between marsh and human effluvia from their specific effects, we have no other mode of distinguishing them.

Febrile miasm in intermittents;

Some writers, indeed, have denied that intermittents, or rather the intermittents of marsh-lands, are produced by a miasm of any kind; for they deny, that any kind of miasm is generated there; and contend, that the only cause of intermittents, in such situations, is air vitiated by being deprived of its proper proportion of oxygen in consequence of vegetable and animal putrefaction, combined with the debilitating heat of the autumnal day, and the sedative cold and damp of the autumnal night *. But

* Currie, Trans. Amer. Phil. Soc.

this opinion is too loosely supported to be worthy of much attention. It is sufficiently disproved by the intermittent described by Sir George Baker, as existing in the more elevated situations of Lincolnshire, while the adjoining fens were quite free from it*. And, in like manner, the severe and intractable intermittents of whatever form or modification, that exercise their fearful sway from Cape Comorin to the banks of the Cavery, from the Ghauts to the coast of Coromandel, not unfrequently pass into a contagious type, and propagate themselves by contagion†. We have as much reason to suppose a febrile miasm in intermittents as in typhus; and, in some instances, they have been found as decidedly contagious. "That intermittent fevers," says Dr. Fordyce, "produce this matter, or, in other words, are infectious, the author (meaning himself) knows from his own observation, as well as from that of others‡."

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sometimes contagious.

And notwithstanding that it becomes us to speak with diffidence upon a subject, respecting which we are so much in want of information, I may venture to anticipate, that the evidence to be advanced in the ensuing pages upon the general nature and diversities of fever, will show, that there is more reason for believing, that the febrile principle, produced by marsh and human effluvia, is a common miasm, only varying in its effects by accidental modifications, and equally productive of contagion, than that it consists of two distinct poisons, giving rise to two distinct fevers, the one essentially contagious, as contended for by Dr. Cullen.

Febrile miasm probably the same produced from both effluvia.

In effect, we shall perceive, that this mysterious subject is capable of being, in some degree, more clearly elucidated and still farther simplified, than it has been by preceding pathologists.

Proposed elucidation of the subject.

In the decomposition of all organized matter, whether vegetable or animal, when suddenly effected by the aid of heat and moisture, an effluvium is thrown forth that is at all times highly injurious to the health, and, in a closely concentrated state, fatal to life itself. Thus, we are told

Insalubrious effluvium from the decomposition of all dead organized matter.

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* Medic. Trans. vol. iii. Art. xiii.

† Report on the Epidemic Fever of Coimbatore: by Drs. Ainsly, Smith, and Christie.

‡ On Fever, Diss. I. p. 117.

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Burial grounds in France.

by Fourcroy, that, in some of the burial grounds in France, whose graves are dug up sooner than they ought to be, the effluvium from an abdomen suddenly opened by a stroke of the mattock, strikes so forcibly upon the grave-digger as to throw him into a state of asphyxy, if close at hand; and if at a little distance, to oppress him with vertigo, fainting, nausea, loss of appetite, and tremors for many hours: whilst numbers of those, who live in the neighbourhood of such cemeteries, labour under dejected spirits, sallow countenances, and febrile emaciation *. This effluvium is from the decomposition of animal matter alone; but, the foul and noisome vapour, that is perpetually blown off the coast of Batavia, and the stinking malaria that rushes from the south-east upon the Guinea coast, though loaded with vegetable exhalations alone, triumph in a still more rapid and wasteful destruction. The last peculiarly so, as being thoroughly impregnated with destructive miasm, while sweeping over the immense uninhabitable swamps and oozy mangrove thickets of the sultry regions of Benin, insomuch that Dr. Lind informs us, that the mortality produced by this pestilential vapour in the year 1754 or 1755 was so general, that, in several negro towns, the living were not sufficient to bury the dead; and that the gates of Cape Coast Castle were shut up for want of sentinels to perform duty; blacks and whites falling promiscuously before this fatal scourge.

Malaria on the Guinea coast.

In these instances accompanied with a stench which itself may be injurious to the health.

In this case, as in the preceding, the vapour is always accompanied with an intolerable stench from the play of affinities between the different gases that are let loose by the putrefactive decomposition; and hence it is impossible to affirm, that the mortality thus produced is the result of any single or specific miasm operating to this effect. But it shows us, that the general effluvium from the decomposition of all dead organized matter, whether animal or vegetable, is equally deleterious to health and life. "Its presence," says the judicious Dr. Jackson, "is often connected with something offensive to the senses,—to the smell, and, perhaps, even to the taste. A certain degree of salivation, nausea, sickness, and head-ach, are often

* Elem. de Chimie, Art. Putrefaction de Subst. Animal. tom. iv.

occasioned by the exhalations of a *swamp*, or the air of an *infected apartment*, but febrile action is not ordinarily the immediate consequence. To produce fever a space of time is required, different according to circumstances*." How far the decomposition of dead vegetable matter, though its effluvium prove thus injurious to the health of man, may *alone* be capable of exciting fever of any kind, may, perhaps, admit of a doubt; for, in the bogs or peat-mosses of Scotland, and still more those of Ireland, the inhabitants are exempt from agues, though the ooze extends in immense tracts.

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The decomposition, however, to which, on the present occasion, we are chiefly to direct our attention, is of a mixed kind; for the marsh and oozy soil of countries, that are closely or have been long inhabited, is necessarily a combination of animal and vegetable matter.

Soil of marshes a compound of animal and vegetable principles.

If this decomposition take place slowly, as in cold or dry weather, and more particularly in a breezy atmosphere, not the slightest evil is sustained during its entire process. And hence, in order to render it mischievous, and particularly in order to render it capable of producing fever of any kind, it is necessary, that it should be assisted by the co-operation of certain agents, many of which we do not seem to be acquainted with, but which, so far as we are capable of tracing them, appear to be auxiliary to the general process of putrefaction, as warmth, moisture, air, and rest or stagnation.

The decomposition not injurious when slow.

What agents quicken and render it capable of generating a febrile miasm.

The simplest and slightest fever, that is produced under the joint influence of these powers, is the intermittent: and we find these produced where their joint influence is but feeble, and where it exists, perhaps, in its lowest stage, as in the favourable climate of our own country; where we are not frequently overloaded with equinoxial rains, and have not often to complain of a sultry sky, or a stagnant atmosphere. Even here, however, we perceive a change in the character of the intermittent at different seasons: for, while in the spring it usually exhibits a tertian type, in the autumn we find it assume a quartan. And as these can only be contemplated as varying branches of the same

Where their influence is feeble the result is intermittents.

Fevers varied in their type

* Outline of the History and Cure of Fever, Part I. ch. iii. p. 104.

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and power by the varying influence of the febrile auxiliaries on the febrile miasm; and the varying state of the human body.

disease, we have thus far, at least, reason to regard it as produced by a common febrile miasm, modified in its operation by a variation in the relative proportion which its auxiliaries, known and unknown, bear to each other during the vernal and autumnal seasons; coupled, perhaps, with some degree of change, produced by the same seasons in the state of the human body.

The more vigorous or abundant the auxiliaries, the severer the fever.

If from our own country we throw our eyes over the globe, we shall find in every part of it, where the same causes exist, that in proportion as they rise in potency they produce a fever of a severer kind, more violent in its symptoms, and more curtailed in its intervals, till we gradually meet, first with no distinct intervals, and at length with no intervals whatever; and hence perceive the remittent progressively converted into intermittent and continued fevers.

Influenced also, by the constitution of the patient.

And that here we have still the same miasm merely modified in its operation by the varied action of its auxiliary powers on the constitution of the individuals it attacks, is as clear as in the former case; because, in many attacks, we see different individuals, touched by the very same influence, exhibit all the varieties now alluded to, and intermittent, remittent, and continued fevers co-existing in every diversity of violence;

Hence remittent and continued as well as intermittent fevers.

commencing with either of these forms; keeping true to the form with which they commenced; or changing one form for another*.

Exemplified by Devèze and Berthé.

Such, as remarked by M. Devèze, was the course of the fever at Philadelphia in 1793†; and such, according to M. Berthé, that of the southern provinces in Spain, in 1800‡: and such was peculiarly the fact in the highly malignant yellow-fever of Antigua in 1816, as admirably described by Dr. Musgrave§.

Illustrated by the yellow-fever at Antigua in 1816.

This last disease first showed itself during sultry weather and a quiet atmosphere, in a swampy part of the island, among a ship's crew lately arrived, but from a healthy vessel, and themselves in good health on first landing. It soon spread widely, and at length indiscriminately in town

* See Sir Gilbert Blane's valuable article on Yellow Fever, in his Select Dissertations, &c. p. 284. 8vo. Lond. 1822.

† Traité de la Fievre Jaune, &c. 8vo. Paris, 1820.

‡ Precis Historique de la Maladie, qui a regnée dans l'Andalusie in 1800.

§ Medico-Chirurg. Trans. vol. ix. p. 92.

and country, among all ranks and conditions and situations, blacks as well as whites, the oldest settlers as well as the newest comers. In some cases, the head was chiefly affected; in others, the stomach, the liver, or a still different organ. Hiccough and black vomit were common towards the close of the disease, though many died without it; and recovery was *no exemption* from a second attack.

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Dr. Musgrave asserts farther, that, during the whole of this fatal epidemy, there was no instance of its being received by contagion. The argument, however, which he offers upon this subject is not quite convincing. Yet, admitting the fact to be as he states it, we have an additional proof, if proof were wanting, firstly, that when the animal frame has been previously debilitated or relaxed, as in the case of a ship's crew that has been long voyaging in high latitudes and living on salted provisions, it suffers sooner and more severely, than where no such relaxation has taken place; and, secondly, that by a long and gradual exposure to the influence of febrile miasm, however produced, whether from the living human body or from dead organized matter, the animal frame becomes torpid to its action, as it does to the action of other irritants. Whence prisoners confined in jails with typhous miasm around them, as well as those who have long stood the climate in the West Indies, receive the contamination, to which they are exposed, far less rapidly than strangers, and are capable of communicating it from their clothes or persons to fresh-men, without being in the least affected by it themselves; as appears to have been the case in various courts of justice, and particularly at the Black Assize at Oxford in July 1577; though Dr. Bancroft has endeavoured to explain this effect in another way *.

Debilitated subjects suffer sooner and more severely when newly exposed to miasm.

Explanation of this fact.

Black Assize of 1577.

The argument, however, of Dr. Musgrave upon this point we have said is not quite satisfactory; because he admits, that those who were about the patients, and paid no attention to personal cleanliness, did not wholly escape; but then, says he, they escaped *as generally* and were *not more frequently* affected, than those who never entered

Remarks on Musgrave's statement that the Antigua fever was not contagious.

* Essay on the Disease called Yellow Fever, &c. Lond. 1811.

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the doors of an infirmary. Now as all ranks and conditions, blacks and whites, even far off in the country, were affected indiscriminately, we have no reason to expect, that those, whose habits had rendered them peculiarly torpid to the action of the febrile miasm should be more frequently affected than others. The very admission, that they were as much so, seems to imply that the febrile miasm was attacking them in some new mode, against which they were not guarded by previous habit. Nor is it easy to conceive, by what means the local disorder of the coast could be converted into so extensive an epidemy, unless through the medium of contagion.

I have dwelt the longer upon this subject, because it is desirable to reconcile as much as possible the conflicting testimony of respectable writers, who, having adopted different theories, are insensibly led to support them by inaccordant descriptions of the same disease.

Counter statements of other writers.

In direct opposition to Dr. Musgrave, Dr. Jackson, Dr. Bancroft*, and a host of distinguished writers who think with them, we are told by Dr. Pym, that the Bulam fever, admitted by Dr. Musgrave to be the same as the above, not only is contagious, but is never introduced into any fresh region but by contagion†. While Dr. Rush, speaking of the yellow fever of Philadelphia of 1793, asserts that "there were for several weeks two sources of infection, viz. exhalation and contagion. The exhalation," says he, "infected at the distance of three and four hundred yards, while the contagion infected only across the streets. After the 12th of September, the atmosphere of every street in the city was loaded with contagion." He adds, that a few caught the disease who had it before: thus taking a middle course between Dr. Musgrave, who tells us that recovery affords "*no* exemption from a second attack," and Dr. Pym, who affirms that the fever "attacks the human constitution but once." In the fever of Cadiz of the year 1800, Sir James Fellowes, who coincides in the view adopted by Dr. Pym, asserts, not only that it was

* Essay on the Disease called the Yellow Fever, ut suprà.

† Observations upon the Bulam Fever, which has of late years prevailed in the West Indies, on the coast of America, at Gibraltar, Cadiz, and other parts of Spain, &c. in 8vo. 1815.

contagious and propagated only by contagion, but that the air "from its stagnant state became so vitiated, that its noxious qualities affected even animals: canary birds died with blood issuing from their bills, and in all the neighbouring towns, which were afterwards infested, no sparrow ever appeared *."

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Atmosphere so contaminated at Cadiz as to affect birds.

I do not remember to have seen this last fact so directly affirmed by any modern writer; but it is not contradicted in the course of the controversy, and is in perfect coincidence with the state of the air during the plague in most places †, and particularly at Athens, as described by Thucydides ‡: τεκμήριον δὲ τῶν μὲν τοιούτων ὀρνίθων ἐπίλειψις σαφὴς ἐγένετο· καὶ οὐχ' ἑωρῶντο οὔτε ἄλλως, οὔτε περὶ τοιοῦτον οὐδέν. Οἱ δὲ κύνες μᾶλλον αἴσθησιν παρεῖχον τοῦ ἀποβαίνοντος, διὰ τὸ ξυνδιαιτᾶσθαι. Whence Lucretius, who does but little more than translate Thucydides:

Similar fact at Athens, as stated by Thucydides.

> Nec tamen omnino temere illis solibus ulla
> Comparabat avis, neque noxia secla ferarum
> Exibant sylvis; languebant pleraque morbo,
> Et moriebantur; cum primis fida canum vis
> Strata animam ponebant in omnibus ægre:
> Extorquebant enim vitam vis morbida membris §.
>
> Nor longer birds at noon, nor beasts at night
> Their native woods deserted; with the pest
> Remote they languish'd and full frequent died.
> But chief the dog his generous strength resign'd,
> Tainting the highways, while the ruthless bane
> Through every limb his sick'ning spirit drove.

There can be or rather there ought to be no question, therefore, that the fever before us was in some regions contagious, or produced from human effluvium; as in other regions, and under other circumstances, it was produced from marsh effluvium. And though, from a prejudice of education that will presently be pointed out, the contrary is still contended for by names of considerable weight, they seem to be overbalanced in number as well as in authority, by those who have enlisted themselves on the opposite

Hence the same fever produced by a like miasm issuing both from human and marsh effluvia.

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* Reports of the Pestilential Disorder of Andalusia, which appeared at Cadiz in the years 1800, 1809, 1810, and 1813, &c. 8vo. 1815.

† Diemerbr. De Peste, cap. vi. Van Swieten, ex prof. Sorbait, in sect. 1407.

‡ Hist. xi. 52. § De Rer. Nat. Lib. vi. 1117.

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side of the question; of which last it may be sufficient to set down the names of Lind, Clarke, Belfour, Chisholm, Blane, M'Grigor, and Johnson, from among our own countrymen; and of Berthé, Bequine, Dalmas, Bally and Pugnet, among foreigners. The facts, brought forward by Sir James M'Grigor upon this subject, are decisive indeed of themselves*. And, those, who are more voracious of proofs, may satisfy the most exorbitant appetite by the numerous and conclusive narratives collected by Dr. Chisholm, and especially the fever described by Dr. M'Cabe†, as prevailing among the Royal York Rangers stationed at Trinidad. "The causes of this fever in its origin were excessive heat, marsh effluvia from a marsh of immense extent in the immediate vicinity of Port of Spain, considerable labour and fatigue. Its contagious character superadded to its marshy was produced by an influx of Spaniards from the Spanish main, in a deplorable state of misery and wretchedness. It was among these unfortunate people, that the contagious fever began‡."

Illustrated in Trinidad.

It is probable, that Sir James Fellowes and Dr. Pym might contend, that, in this quarter, the fever was imported, and maintained by contagion alone, as they have contended was the case in the Yellow Fever of Cadiz in the year 1808; but, even in this last case, they have completely failed in establishing the question of its supposed importation by a ship's crew from Spanish America; and as there is no doubt in the mind of those who have not buckled on the armour of controversy, that this fever was the common fever of the Mediterranean coasts, so well described by Dr. Cleghorn, and which, under different names and with different degrees of violence, commits its ravages mostly about the autumnal equinox, from the swampy shores of the Nile to the oozy banks of the Tiber, and which is often found as destructive in the Campania as in the East or West Indies, there should be no longer any doubt of the operation of one and the same miasm or febrile principle in all these cases; sometimes issuing from the effluvia of the living body, and sometimes from that of

And hence the fever of the Mediterranean and American coasts, in the East and West Indies, one and the same, only varied by incidental circumstance.

* Medical Sketches, passim.

† Edinb. Med. and Surg. Journ. Oct. 1819.

‡ Climate and Diseases of Tropical Countries, p. 42, 8vo. 1822.

dead organized matter: generated, to adopt the language of Professor Frank, "Tam in ægrotantium variorum, corpore, quam in atmosphæra, plurimorum exhalationibus inquinata, favente anni constitutione*;" and consequently, that the whole of that part of Dr. Cullen's system is erroneous which supposes a different specific principle of fever to be generated in each; the one distinguished by being limited to the production of uncontagious intermittent fever, and the other to that of contagious continued fever. And it is of the more importance that the error of this doctrine should be pointed out, since it has proved the very groundwork of that altercation, which has prevailed upon the subject before us. For the writers on both sides having equally drunk from the Cullenian fountain, and being equally impressed with the truth of this doctrine, have only warred with each other in support of Dr. Cullen's distinction; and hence, those who have so clearly witnessed the origin of the fever from marsh effluvium, that they have been compelled to acknowledge this as its source, have felt themselves compelled at the same time to deny that it is contagious; while those who have as clearly witnessed its contagious power, have as forcibly felt themselves compelled to deny, that it has sprung from marshy miasm.

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Hence Cullen's doctrine on this subject erroneous.

And the ground of the altercations that have arisen.

Dr. Jackson affords us one of the clearest proofs of the truth of this remark in his late, as well as in his earlier works. There is no writer, who has more distinctly pointed out the close analogy between the symptoms of the marsh endemic of the West Indies, and contagious fever, as they very frequently show themselves, than he has done; "the derangements," says he, "are exteriorly so much alike, that the discriminating characters cannot be delivered but with doubt and hesitation; the result of the whole appearances will often determine the judgment, but the symptoms, separately considered, lead to no certainty. The causes of endemic and of contagious fevers were equally connected under certain conditions, with eruptions on the skin, ulcers of the extremities, diarrhœa, purging, dysentery, or flux, fever of an intermitting or remitting form, of a form continued,—violent and rapid in course, moderate and of

Illustrated in Dr. Jackson.

* De Cur. Hom. Morb. Epit. tom. i. 8vo. March, 1792.

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ordinary duration, or slow, lurking and irregular, ceasing and returning at intervals,—changing from general to local disease of various descriptions, and from local disease to general and formal fever.—The general manner of attack, the course, changes and duration of endemic and contagious fevers have great similarity.—Certain modes of action or combinations of action prevail more frequently in the one disease than the other, *but forms and modes do not constitute characteristic differences:* thus affection of the stomach and biliary system,—vomiting and yellowness are less frequent in contagious than in endemic fever; yet, they do occur in the former, and sometimes to considerable extent: affection of the chest, alternating with delirium or affection of the head, appears to be more common in contagious than in endemic fever; so likewise is a peculiar maniacal derangement or lively delirium, occurring in the progress to recovery: yet the frequency of these appearances *does not furnish a characteristic mark**." That is to say, all the leading symptoms which make and determine the diseases are the same; and yet though practically and in fact they run into each other and are the same, yet speculatively and theoretically they are not the same, and never can run into each other in the opinion of this valuable writer, because Dr. Cullen has laid down the dictum, that intermittents must proceed from paludal miasm and be uncontagious, and contagious fevers from the morbid effluvium of animal bodies alone. Yet, after all, the substantive part of the tenet seems to be relinquished by Dr. Jackson in the following passage, which occurs in his remarks on the yellow fever that ravaged the Spanish coasts in 1800, notwithstanding the firmness with which the Cullenian doctrine is ostensibly maintained. "The case may perhaps be thus explained. The yellow fever, during the reign of epidemic influence, often *strikes like a pestilence by the mere concourse of people in a close place;* and if a mass of sick persons be collected into an hospital during the epidemic season, *the common emanations from the sick bodies,* whether saturated with contagious particles or not, *often act offensively on those who enter the circle,* and often appear to

* History and Cause of Fever, pp. 213, 214. 216.

be the cause of the explosion of a disease, which, without accessary or changed condition of the medium in which man lives, would have probably remained dormant for a time and perhaps for ever*."

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In the typhus, or the fever that originates in crowded jails, and other thronged and noisome abodes, there is no longer a question concerning its human origin, or emanation from sick bodies, and its contagious property; at least among practical writers. But typhus does not differ more widely in its symptoms from some of the modifications of the fever we have just contemplated, than such modifications do from others of the same fever, varied by the varying power of its co-operating agents†. And hence, we have reason to conclude, that typhus also is generated from the same common febrile miasm, modified in its action by influential contingencies.

How far typhus approximates to yellow fever.

A modified offspring from the same common miasm.

In effect, the yellow fever itself, under peculiar circumstances, assumes something of a typhous character even in its first origin, and where the source has unquestionably been marsh miasm. The second form of the Andalusian fever, as described by Dr. Jackson, and especially characterized by defective energy, peculiarly exemplifies this remark; and such was expressly the case with the asthenic remittent at Breslaw in 1757‡, as well as in the island of Edam on the coast of Batavia in 1800, and is still oftener found in the remittent that takes place along the Gambia, after rain in the spring or early part of the summer; when there is less organized matter remaining on the surface of the earth to be decomposed, and what there is has been acted upon by a lower temperature and a shorter duration of heat than in the autumn. "In the month of June," says Dr. Lind, "almost two-thirds of the white people were taken ill. Their sickness could not well be characterized by any denomination commonly applied to fevers: it however approached nearest to what is called a *nervous fever*, as the pulse was always low, and the brain and nerves seemed principally affected. It had also a tendency to frequent

Yellow fever itself often typhous from the first.

* Remarks on the Epidemic Yellow Fever, &c. on the South Coasts of Spain, p. 44. Lond. 8vo. 1821.

† Caizerques, Mémoires sur la Contagion de la Fièvre Jaune, Paris.

‡ Chisholm, Manual of the Climate and Diseases of Tropical Countries, &c. p. 38. 1822.

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But more frequently in its progress.

remissions." The patients were often attacked with a delirium, and ran into the open air, where they received benefit from an affusion of heavy rains upon their naked bodies. The delirium, however, it seems, "soon returned; they afterwards became comatose, their pulse sunk, and a train of nervous symptoms followed; their skin often became yellow." And even where the disease commenced with symptoms of great excitement, and an intermittent type, it is so much disposed, under peculiar incidents, as great fatigue, disappointment, and short provisions, to run into a typhus fever, as at Walcheren * and during the retreat of the British army from Corunna, that many nosologists have thought themselves called upon to make this form a distinct variety or even species of fever, which they have usually distinguished by the name of *typhus icterodes*, or yellow typhus.

Both originate in similar situations.

In like manner, where the yellow fever has commenced originally from contagion, or, in other words, from a decomposition of human instead of marsh miasm, it has been under the very same auxiliaries of filth, poverty, crowded numbers, and a stagnant atmosphere, that give rise to typhus. Thus the fever of Malaga of 1803, uniformly admitted to be of the same kind as that of Cadiz in 1800, spread first, according to Professor Arejula's description, through the narrow, crowded, and offensive lanes of the district de Perchel; and that of Cadiz itself, according to Sir James Fellowes, made its earliest appearance in the Barrio de Santa Maria, a part of the town, in which the streets are narrower, less ventilated and cleanly than any other part, and where the poorer inhabitants, dirty in their persons, and crowded in filthy rooms, generally live together. It is true, that it was conjectured by many persons, and among others by both these writers themselves, that the contagion did not originate in either of these situations, but was introduced into them by foreign shipping; but such a conjecture has, in the first place, no trustworthy evidence for its support; and, in the second, the mere testimony of the captain of the ship referred to was

* Chisholm, Manual of the Climate and Diseases of Tropical Countries, &c. p. 38. 1822.

directly contradicted by the chief physician of the hospital at the Havannah, who was on board the whole time, and was privy to the cases in question. In effect, a cause thus secondary seems to have been superfluous; for the local causes enumerated by Sir James Fellowes and Professor Arejula,* appear to have been perfectly adequate. They are, as near as may be, the same as those, which operate so fatally on the miserable and crowded cabins of Ireland; and if the fever had shown itself at a cooler season of the year, and the subjects of it had been still more broken down in constitution by mental dejection and low diet, it would probably from the first have assumed a continued and typhous character, instead of a remittent and more energetic. The proofs, offered upon this subject, from personal and accurate observation, by Dr. Jackson and Dr. O'Halloran, are in full confirmation of this view: for, there can be no doubt that the fever of 1820 and 1821, which they describe, was the same as that of 1800 and 1803.

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Cause of their difference.

"From an impartial consideration," says Dr. O'Halloran, "of all the circumstances attending the epidemies of Spain in the year 1821, the conclusion is, I think, fairly deducible, that the disease was not, and is not occasioned by imported contagion, and that its origin cannot be attributed to the germ of a former epidemic, resuming original activity from the operation of a peculiar state of atmosphere, without which it would remain dormant, perhaps, for ever.—All the towns and cities, which suffered from the yellow fever were, with the exception of Cadiz, filthy in the extreme, disgustingly so, and very objectionable on the score of ventilation, situation, and form of construction: while the different towns of Arens, Matero, Badalona, Tarragona, Vinaros, Benicarla, Valencia, Aliama, Velez, Malaga, Marabella, Estepona, Vejer, Conil, Puerto Real, Rota, Chipiona, Orcos, and Medina Sidonia,—all of which are in the vicinity of the sea, and which, it may be presumed from their relative situations, communicate freely with the theatres of disease, were not affected by the malady. They seldom, indeed, suffered in any other years; because, in-

Farther illustrated from the late fevers in Spain.

* Brieve Descripcion de la Fiebre Amarilla, p. 229. Madrid, 1806.

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dependent of their localities, being better chosen for health, they are comparatively clean*."

Miasm from human effluvium and dead organized matter decomposed, essentially the same, but modified in some of its properties.

The febrile miasm then, generated by a decomposition of human effluvium and of dead organized matter, appears to be essentially the same, modified alone in one or two of its qualities by the co-operation of the heat, moisture, stagnant atmosphere, and perhaps some other unknown agents, that are necessary to give it birth or activity.

Chief differences between them.

The chief difference, produced in this miasm under these distinct modes of origin, is, that when generated by the decomposition of effluvium issuing from living human bodies, it is less volatile†, and has at the same time a power more directly exhausting, or debilitating the sensorial energy, than when generated by the decomposition of dead organized matter. Whence fevers, originating in jails or other confined and crowded scenes, contaminate the atmosphere to a less distance, than those from marshes or other swamps, but act with a greater degree of depression on the nervous system when once received into it. Yet, even the latter have a definite atmosphere of action, beyond which they lose their power, and an atmosphere of a more limited diameter, than we might at first be tempted to conceive: for, we learn from Sir Gilbert Blane, that, in the unfortunate expedition to Walcheren, the crews of the ships in the road of Flushing were entirely free from the endemic of the country, as were also the guard-ships, which were stationed in the narrow channel between Flushing and Beveland;—the width of which channel is only about six thousand feet‡."

Impure air necessary for an extensive spread.

In whatever mode derived, the remark of my excellent and distinguished friend Dr. Hosack will still hold, not indeed that it is altogether incapable of taking effect in a pure atmosphere, but that "an impure atmosphere is indispensably necessary to extend the specific poison§."

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* Remarks on the Yellow Fever on the South and East Coasts of Spain, &c. By Th. O'Halloran, M.D., &c. p. 184. Lond. 8vo. 1823.

† Hist. and Cure of Fever, by R. Jackson, M.D., part I. chap. III. p. 102.

‡ Select Dissertations, &c. p. 107.

§ Obs. on the Laws governing the communication of contagious Diseases, 4to. New York, 1815.

And I should also fully concur with him, and Professor Brera* in censuring the application of the term *epidemic* to any of the febrile diseases hereby produced, provided this epithet were usually confined, which I am not aware of, to disorders supposed to result from some primary intemperament of the atmosphere itself: and provided also every attempt at distinction were not likely to perplex, rather than to simplify, a subject sufficiently intricate *ab ovo;* of which M. Devèse has furnished us with an ample specimen in his late treatise†. ORDER I. Pyrectica. Remote causes.

Why a corrupt state of the atmosphere should be necessary to the general action of the febrile miasm, is a question which still remains to be discussed. Dr. Hosack supposes that the latter "produces its effects by some chemical combination with the peculiar virus secreted from the diseased body," and which is floating in the atmosphere: of the nature of which virus, however, he has not given us any information; while Dr. Chisholm conceives, that it is the impurity of the atmosphere itself, which operates by "increasing the susceptibility of the system to the action of the poison introduced‡." But to this explanation Dr. Hosack successfully rejoins, "that the predisposition of those, who are most exposed to such impure air is less, while those, who reside in the pure air of the country, are most liable to be infected when exposed to the contagion." Why an impure atmosphere necessary. Explanation of Hosack. Of Chisholm.

In a pure atmosphere, the miasmic materials easily become dissolved or decomposed; but slowly and with great difficulty, perhaps not at all, in a corrupt atmosphere, already saturated with foreign corpuscles. In a state, thus crowded, moreover, they less readily disperse or ascend beyond their proper periphery of action: and, perhaps, by their tenacity adhere to bodies more ponderous than themselves, and thus loiter for a still longer period within the stratum of human intercourse. And as it is from the same tenacity they adhere to various kinds of clothes and filth, we may easily perceive why, on the shaking or agitation Explanation offered by the author.

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* De' Contagi e della cura de' loro effetti, Lezioni Medico-pratiche del Cavaliere Brera, M.D., &c. 2 vols. 8vo. Padua, 1819.

† Traité de la Fièvre Jaune, p. 354. 8vo. Paris, 1820.

‡ Letter to Haygarth.

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of such substances, as in clearing a ship's hold, or unpacking its cargo, a pestilence may be generated, of which the crew have hitherto given no signs*.

Objections avoided by this explanation.

Upon this explanation it is not necessary to suppose, that febrile miasm has a power either of concentrating its virulence†, so as to render itself more active; or of multiplying its own form, so as to increase its numerical strength; against both which views there are weighty objections. Every distinct particle thus suspended, and withheld from dissolution, becomes an active individual in the field of battle, and is almost sure to grapple with its man. So that hereby alone we have a force, equal to any degree of mortality that can be conceived.

Origin and laws of febrile miasm.

While, then, the remote causes of fever are of different kinds, its chief and most effective is febrile miasm; the origin and laws of which, so far as we are at present acquainted with it, may be expressed in the following corollaries:

1. The decomposition of dead organized matter, under the influence of certain agents, produces a miasm that proves a common cause of fever.

2. The whole of these agents have not yet been explored; but so far as we are acquainted with them, they seem to be the common auxiliaries of putrefaction, as warmth, moisture, air, and rest, or stagnation.

3. The nature of the fever depends, partly upon the state of the body at the time of attack; but, chiefly, upon some modification in the powers or qualities of the febrile miasm, by the varying proportions of these agents in relation to each other, in different places and seasons. And hence, the diversities of quotidians, tertians, and quartans, remittent and continued fevers, sometimes mild and sometimes malignant.

4. The decomposition of the effluvium, transmitted from the living human body, produces a miasm similar to that generated by a decomposition of dead organized matter, and hence capable of becoming a cause of fever under the influence of like agents.

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* Blane, Select Dissertations, &c. p. 307, Lond. 1822.

† Jackson, ut suprà part I. chap. x. p. 246.

ORDER I. Pyrectica. Remote causes.

5. The fever thus excited, is varied, or modified, by many of the same incidents, that modify the miasmic principle when issuing from dead organized matter; and hence, a like diversity of type and vehemence.

6. During the action of the fever thus produced, the effluvium from the living body is loaded with miasm of the same kind, completely elaborated as it passes off, and standing in no need of a decomposition of the effluvium for its formation. Under this form, it is commonly known by the name of febrile contagion. In many cases, all the secretions are alike contaminated; and hence febrile miasm of this kind seems sometimes to be absorbed, in dissection, by an accidental wound in the hand, and to excite its specific influence on the body of the anatomist.

7. The miasm of human effluvium is chiefly distinguishable from that of dead organized matter, by being less volatile, and having a power of more directly exhausting or debilitating the sensorial energy, when once received into the system. Whence the fevers generated in jails, or other confined or crowded scenes, contaminate the atmosphere to a less distance, than those from marshes and other swamps; but act with a greater degree of depression on the living fibre.

8. The more stagnant the atmosphere, the more accumulated the miasmic corpuscles, from whatever source derived; and the more accumulated these corpuscles, the more general the disease.

9. The miasmic material becomes dissolved or decomposed in a free influx of atmospheric air: and the purer the air, the more readily the dissolution takes place: whence, è contrario, the fouler as well as more stagnant the air, the more readily it spreads its infection.

10. Under particular circumstances, and where the atmosphere is peculiarly loaded with contamination, the miasm that affects man is capable also of affecting other animals.

11. By a long and gradual exposure to the influence of febrile miasm, however produced, the human frame becomes torpid to its action*, as it does to the action of other

* Brera, De' Contagi e della cura de' loro effetti, &c. ut suprà, Padua, 1819.

ORDER I. Pyrectica. Remote causes.

irritants: whence the natives of swampy countries, and prisoners confined in jails with typhous contamination around them, are affected far less readily than strangers; and, in numerous instances, are not affected at all.

12. For the same reason, those who have once suffered from fever of whatever kind hereby produced, are less liable to be influenced a second time; and, in some instances, seem to obtain a complete emancipation.

Doctrine of crises.

It only remains to offer a few remarks upon the DOCTRINE OF CRISES; or that tendency, which fevers are by many supposed to possess, of undergoing a sudden change at particular periods of their progress.

Crisis, what, in the present day.

A sudden and considerable variation of any kind, whether favourable or unfavourable, occurring in the course of the general disease, and producing an influence on its character, is still loosely expressed by the name of crisis.

Primary meaning and use of the term.

The term is Greek, and pathologically imports a separation, secretion, or excretion of something from the body; which was in truth the meaning ascribed to it when first employed, agreeably to the hypothesis of concoction which we have just considered. The original hypothesis is abandoned; but the term is still continued in the sense now offered.

Critical distinctions of Frank.

"If the matter of the disease," says Professor Frank, "be expelled by some one convenient outlet, in the skin, kidneys, bowels, or blood-vessels, the crisis is simple; if by several of these at the same time, it is compound; if the whole be carried off at once, it is perfect. If it be carried off at different times, it is a *lysis*†, or resolution."

Crisis often occurring, in the modern sense of the term.

That changes of this kind are perpetually occurring in the progress of continued fevers, must, I think, be admitted by every experienced practitioner. Nothing is more common, than to behold a patient suddenly and unexpectedly grow decidedly better or worse in the progress of a fever of almost any kind, and pass on rapidly towards a successful or an unsuccessful termination.

Whether in the ancient sense, or on critical days.

But the important question is, whether there be any particular periods in the progress of a fever, in which such changes may be expected? Hippocrates conceived there were: he endeavoured to point out and distinguish them by

† De Curandis Hominum Morbis Epitome, &c., tom. i. De Febr. p. 26.

the name of critical days. Asclepiades and Celsus denied the existence of such periods; and the same diversity of opinion has prevailed in modern times. ORDER I. Pyrectica. Doctrine of crises.

It is not very easy to determine the point at the present day, and, especially, in our own country. For, first, fever, like many other complaints, may have undergone some change in its progress from a like change in the nature of its remote causes, or in the constitution of man. And, next, it seems to be generally allowed, that sudden transitions, whether regular or irregular, are more apt to take place in almost all diseases in warm, than in cold climates. On these grounds, it is probably a subject, which will never become of great practical importance at home. Yet, it is well worthy of attention as a question of history, and one that may yet be of great importance to many parts of the world. Not easy to determine in cold climates.

If we examine the phenomena of the animal economy, as they occur in a natural series, we shall find, that they are in almost every instance governed by a periodical revolution. A man, in a state of health and regular habits, generally becomes exhausted of sensorial power within a given period of time, and requires a periodical succession of rest: his appetite requires a periodical supply; and his intestines a periodical evacuation. This tendency equally accompanies and even haunts him in disease; he cannot disengage himself from it. Gout, rheumatism, mania, rapidly and pertinaciously establish to themselves periods of return. The hemorrhoidal discharge often does this; and the catamenia constantly. The same occurs in fevers, but especially in intermittents: for the quotidian, the tertian, the quartan, have, upon the whole, very exact revolutions. And, though accidental circumstances may occasionally produce a considerable influence on every one of these facts, whether morbid or natural, the tendency to a revolutionary course is clear and unquestionable. Periodical revolutions in all the phænomena on the animal economy. Examples of this remark.

Now, although Hippocrates has not appealed to this reasoning, it forms a foundation for his observations: and when, stript of the perplexities that encumber his writings upon this subject, partly produced by erroneous transcripts, and, in a few instances, perhaps, by his own irresistible attachment to the Pythagorean hypothesis of numbers, he may be regarded as laying down the following as the critical They support the observations of Hippocrates upon critical days.

ORDER I. Pyrectica. Doctrine of crises.

days of continued fever: the 3d, 5th, 7th, 9th, 11th, 14th, 17th, 20th; beyond which, it is not worth while to follow the series; for, it is not often that they extend further.

Critical days of Hippocrates.

In other parts of his works, he regards also the 4th and 6th, and even the 21st as critical days; so that in the first week, every day, after the disease has fully established itself, evinces a disposition to a serious change; in the second week, every other day; and in the third week, every third day. It is not easy to determine, why the 21st day should be a critical day, as well as the 20th. Various conjectures have been offered upon the subject; by some, it has been regarded as a mistake in the Greek copy, and by others, as a piece of favouritism in Hippocrates for this number, in consequence of its being an imperfect one in the Pythagorean philosophy, as the commencement of a septenary.

Hippocrates put to the test by De Haen.

De Haen, with rigid and patient assiduity, has put Hippocrates to the test upon these data; for he has accurately analyzed Hippocrates's own journal of the numerous cases of fever he has so industriously collected and recorded, and finds the positions, in most instances, to be strictly justified; and that out of 168 terminations of fever, not less than 107, or more than two-thirds, happened on the days denominated critical, not reckoning the 4th, 6th, or 21st, and that the 4th and 6th were very frequently critical. There are a few anomalies; but it is not necessary to notice them, because they are easily referrible to accidental causes, similar to those that retard or accelerate the paroxysm of intermitting fevers.

Critical days of Hippocrates accounted for upon the types of different intermittents.

Now, admitting the Hippocratic table to be true, the continued fever, in its progress, is measured by the various types exhibited by intermittent fevers. Thus, the quotidian prevails through the first seven days; there is on each day a slight exacerbation, and no one day is more critical than any other. After this period, the tertian type commences, and runs through the ensuing week; the principal changes occur on the 9th and 11th days, and would occur on the 13th, but that the quartan type now assumes its prerogative; and the principal transitions, after the 11th, take place on the 14th, instead of on the 13th; on the 17th; and on the 20th. Dr. Cullen, who has examined this subject with great attention, and simplified it from many of its

The subject confirmed by Cullen's experience,

difficulties, directly asserts, that his own experience coincides with the critical days of Hippocrates; Dr. Fordyce, who scarcely does justice to Cullen upon other points, unites with him upon the present, and justly compliments him upon his ingenious examination and explanation of the Greek distribution of critical days; and Dr. Stoker of Dublin has arrived at a like conclusion, after what appears to have been a very patient, discriminating, and extensive inquiry*. It is, nevertheless, admitted on all hands, that the order of succession is far less distinct, as well as less regular, in cold, than in warm climates; and that it requires a thoroughly attentive and practised eye to notice these changes in our own country, or indeed in any part of northern Europe. And hence, Craanen says, it is lost time to look for them†; Stoll, that they are only to be found in inflammatory fevers‡; Le Roy, that the supposed critical days have no influence, and can lead to no prognosis or peculiarity of practice§; and Frank, that nature has fixed upon no one day rather than another, for a solution of fever, nor at any time forbids our attempt at executing a present indication‖. Dr. Jackson, partly from the strength of his attachment to the doctrines of Cullen, and partly from having principally practised in hot climates, is a great advocate for the existence of critical days, and believes them to take place in fevers from human as well as marsh miasm; though less distinctly as also less frequently in the former, than in the latter¶. Why the first week of a fever should incline to a quotidian type rather than to a tertian, or the second to a tertian rather to a quartan, we know no more than we do why fevers should ever intermit, or at any time observe the distinctions of different types. We are in total ignorance upon all these subjects. We see, moreover, that intermitting fevers, whether quotidian, tertian, or quartan, have their paroxysms recur regularly in the daytime; the quotidian in the morning, the tertian at

ORDER I. Pyrectica. Doctrine of crises. and Fordyce's.

Still less distinct in cold than in hot climates.

Difficulties attending the subject.

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* Medical Report of the Fever Hospital, &c. for 1816. Trans. of the King's and Queen's Coll. Dubl. vol. ii. p. 434. 8vo. 1824.

† De Homine. ‡ Rat. Med. Part. IV. p. 283.

§ Du Pronostic dans les Maladies Aigues, 8vo. Montpel. 1778.

‖ De Curandis Hom. Morbis Epit. tom. i. 29.

¶ Hist. and Cure of Fever, Part. I. ch. ix. p. 242.

ORDER I. Pyrectica.

noon, and the quartan in the afternoon; and that, in no instance, do the paroxysms take place at night: and we see also that, in continued fevers, the exacerbations uniformly take place later in the day, than the paroxysms of the latest intermittent; for these rarely occur earlier than between five and six o'clock in the evening, while the paroxysms of the quartan return commonly before five. Of these interesting and curious scenes we are spectators; but we are nothing more; for we are not admitted to the machinery behind the curtains.

Crises referred to the influence of the heavenly bodies.

Their influence, in the opinion of the ancients.

By some pathologists the source of these phenomena is sought in the influence of the heavenly bodies, and especially in those of the sun and moon. In ancient times, these luminaries were supposed to produce an effect on all diseases, and especially on mania, epilepsy, catamenia, and pregnancy. And when the Newtonian philosophy first illumined mankind with the brilliant doctrine of universal attraction, Dr. Mead stepped forth into the arena, and revived and supported the ancient doctrine with great learning and ingenuity. And as an ingenious conjecture and possible fact, of which no practical use could be made, it was contemplated till towards the close of the last century:

Of Darwin;

about which time Dr. Darwin, by interweaving it with his new hypothesis, once more endeavoured to raise it into popular notice, and give it an air of serious importance.

of Dr. Balfour.

Dr. Balfour, of British India, however, has still more lately brought it forward as a doctrine capable of direct proof, and as peculiarly affecting the progress of fevers. His opinion, which he endeavours to support by weighty facts and arguments, is, that the influence of the sun and the moon, when in a state of conjunction, which is named sol-lunar influence, produces paroxysms or exacerbations in continued fever, in all cases in which a paroxysmal diathesis (for such is his expression) exists; and as this influence declines, in consequence of the gradual separation of these luminaries from each other, and their getting into a state of opposition, a way is left open to the system for a critical and beneficial change, which is sure to take place, provided the critical disposition is at this time matured. In other words, paroxysms and exacerbations in fever may be expected to take place (and do in fact take place) at spring-tides, and crises at neap-tides.

This is a new view of the influence of the heavenly bodies upon the human frame; and a view which, though feebly supported by facts, is advanced with all the dogmatism of an established science. Dr. Stoker, at the particular request of Dr. Balfour, put his doctrines to the test of 276 patients between July 6 and September 6, 1817, in Dublin. He has candidly given us his tables, and as candidly observes, that "very little coincidence indeed is to be remarked from a view of these tables*." There is, nevertheless, more in medical astrology than is, perhaps, generally supposed; it is an important branch of meteorology, and, as such, is well worth studying. Nor can there, I think, be a question in any impartial mind, that, *under certain circumstances*, and especially in tropical climates, many diseases are influenced by lunation, as we are sure they are, in all climates, by insolation. The concurrent observations of a host of candid and attentive pathologists, who have been witnesses of what they relate, are sufficient to impress us with this belief: but, till we know more fully what these *circumstances* are, we cannot avail ourselves of their remarks, and can only treasure them up as so many isolated facts. And hence, in no age or country whatever, has the study been turned to any practical advantage, expedited the cure of a disease, or enabled us to transform the type or interval of one kind of fever into that of another. Nor is it any exclusive reproach to the art of medicine that it should be so; for, of all the subdivisions of general philosophy, there is none so little entitled to the name of a science as meteorology itself. And till the naturalist has explained the variations of the barometer, the physician need not blush at being incapable of turning to account the supposed influence of the planets, or of unfolding the origin, or tracing the capricious courses, of epidemics and pestilences.

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* Trans. of the King's and Queen's Coll. Dublin, vol. ii. p. 435. 8vo. 1824.

# GENUS I.

## EPHEMERA.

### *DIARY FEVER.*

ONE SERIES OF INCREASE AND DECREASE; WITH A TENDENCY TO EXACERBATION AND REMISSION, FOR THE MOST PART APPEARING TWICE IN TWENTY-FOUR HOURS.

GEN. I. The simple fever of Fordyce. Essential fever of French writers.

THIS is the simplest form, in which fever at any time makes its attack; and hence, Dr. Fordyce has distinguished it by the name of SIMPLE FEVER. It is probably that which is intended by the term *essential fever*, as used by the French writers. It is, in truth, the basis of all other fevers; which are hence arranged by Elsner as mere species of this*. For the purpose, however, of entering into the full character, not only of the present, but of all the subsequent genera, and their respective species, it is necessary to bear in mind, that the ordinal definition forms a part of that character, and is essentially included in a less or greater degree in all the subdivisions that appertain to it.

The term has been erroneously applied.

The ephemera rarely exceeds a duration of twenty-four hours. Some practitioners, however, have called by this name a fever that has extended to three days; and Sauvages has arranged this mode of fever under his own genus of ephemera, as has also Professor Frank, distinguishing the proper ephemera by the adjunct *simplex*, and its elongated form by that of *protracta*†. But this is to confound different species under one generic name. Fordyce asserts, that he has often seen the ephemera commence its attack with all the essential appearances of fever, and terminate in eight, ten, or twelve hours‡. And hence, in defining ephemera, the symptom of duration ought not to exceed the limit here allotted to it.

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* Beyträge zur Fieberlehre. Königsb. 8vo. 1789.

† De Cur. Morb. Hom. Epit. tom. i. p. 156. 185. 8vo. Mannh. 1792.

‡ On Simple Fever, Diss. 1. p. 33.

In this simple shape of the disease, the pathognomic symptoms are few and striking; for, however violent, it is confined to a single paroxysm of three distinct stages, shivering or languor, heat, and perspiration; each most probably dependent on the other, and ceasing, when true to itself, after having followed up the movements of the animal frame through a single diurnal revolution. The cold stage, however, is often scarcely perceptible, and sometimes altogether imperceptible, the general languor taking place without it.

GEN. I. Ephemera. Stages of diary fever, three.

The genus exhibits two common and very distinct species; and if the ephemera *sudatoria* of Sauvages, the sweating-sickness or English plague of other authors, be regarded as belonging to it, as unquestionably it ought, it will then afford us another after the manner following:

1. EPHEMERA MITIS. MILD DIARY FEVER.
2. ——— ACUTA. ACUTE DIARY FEVER.
3. ——— SUDATORIA. SWEATING FEVER.

## SPECIES I.

## EPHEMERA MITIS.

### *MILD DIARY FEVER.*

WITHOUT PRECEDING RIGOR; LASSITUDE AND DEBILITY INCONSIDERABLE; PAINS OBTUSE, CHIEFLY ABOUT THE HEAD; HEAT AND NUMBER OF THE PULSE INCREASED SLIGHTLY; DRYNESS OF THE TONGUE AND FAUCES; TERMINATING IN A GENTLE PERSPIRATION.

THE common exciting causes are excess of corporeal and especially of muscular exertion; long protracted study; violent passion; suppressed perspiration; sudden heat or cold.

GEN. I. SPEC. I. Causes.

There are few persons who have not felt this species of diary fever at times, from one or other of the causes just enumerated. When a man has worked himself up into a violent and long continued fit of wrath, whether there have been reason or no reason, and more especially in the latter

The fever frequent from one or other of these causes.

Gen. I. Spec. I. Ephemera mitis.

case; when he has taken a long and fatiguing journey on foot, walking with great speed, and suffering beneath great heat and perspiration; or when he has devoted the whole of the day to a particular study, so profound and abstracting as to exhaust almost the entire stock of sensorial power that can be drawn from other parts of the system, at the single outlet of the attention;—and when, beyond this, he still urges his abstruse and protracted train of thought into a late hour of the night or the morning—there is a general irritation or undue excitement produced, that simple rest cannot at once allay; his sleep is short, hurried, and interrupted if he sleep at all; he yawns, stretches his limbs, turns himself again and again in his bed for an easy, perhaps for a cool place, for his skin is hot and dry; but for a long time he turns in vain. The morning strikes upon his eyes, but he has had little sleep, and no refreshment: he is indisposed to leave his bed; and if he rise, he is still feverish, and unfit for business. He passes the day in disquiet, which perhaps increases towards evening; but at night he feels a moisture breaking forth over his skin, and comfortably succeeding to the heat and dryness that have thus far distressed him; he recovers perhaps even while sitting up; but if, as he ought to do, he goes to an early bed, a quiet and refreshing sleep supervenes, and he wakes to the health he before possessed.

Description.

It is not easy to explain, why the febrile paroxysm should be more disposed to close its career sometimes towards the evening, but more generally later at night, except for the reason, whatever that reason may be, that all fevers are far more apt to commence their paroxysms in some part or other of the daytime, and especially intermittents, and consequently to drop them as the day declines. Thus the quotidian makes its assault in the morning, the tertian at noon, and the quartan in the afternoon: as though the diurnal revolution were somewhat regularly divided between febrile attack and febrile cessation or truce. It is possible indeed, that a fever of any kind may open its onset at any hour; but this is so contrary to the ordinary rule, that Dr. Fordyce affirms, from his own observation, that ten fevers commence in the day to one at night.

The species before us forms scarcely a case for medicine:

since nature, or that instinctive power, which is ever operating to the general welfare of the animal frame, will be usually found competent to its object. So that if any thing remedially is attempted, it should be confined perhaps to abstinence from animal food, a slight increase of the peristaltic action of the intestines by a dose of neutral salts, and to a removal of the dry heat of the skin by diluents and small doses of ipecacuan, which combines admirably with most aperients, and increases their power, while its own diaphoretic quality continues at least undiminished and is often improved. This is now well known, though not a discovery of recent date; for Gianella, Vater, and various writers of credit, strongly recommended the same from personal experience nearly a century ago*.

GEN. I. SPEC. I. Ephemera mitis. Medical treatment.

Gamesters, after sitting up all night, and being worked up to madness by the chances and reverses of their ruinous stakes, are peculiarly subject to this species. A very cold and wet towel, tied round the temples, seems to give some check to the violent excitement of the brain; but, in the long run, I have generally found persons, who have adopted this practice, become debilitated and dropsical, and sink into an untimely grave, or creep on miserably through the fag end of a lingering life, that affords no retrospective comfort, with a hospital of diseases about them. But, whether this proceed from the practice adverted to, or from the habitual exhaustion, which necessarily accompanies a course of gambling, may admit of a doubt.

Gamesters frequently suffer severely from this species.

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* Gianella, De admirabili Ipecacoanhæ virtute in curandis febribus, &c. Patav. 1754.—Vater, Diss. de Ipecacoanhæ virtute febrifugâ, &c. Witeb. 1732.

## SPECIES II.

## EPHEMERA ACUTA.

### *ACUTE DIARY FEVER.*

SEVERE RIGOR; GREAT HEAT; PULSE AT FIRST SMALL AND CONTRACTED, AFTERWARDS FULL AND STRONG; PERSPIRATION COPIOUS; GREAT LANGUOR.

GEN. I. SPEC. II.

IN a few instances the accession is slightly marked, and there is little chilliness or rigor. The heat that succeeds, however, is always considerable; the face is red and bloated; and there are often pungent and throbbing pains in the head, corresponding with the pulsations of the arteries; though at times the pain in the head is dull and heavy. The high-coloured urine deposits a sediment with a tinge of orange-peel.

Generally produced by some affection of the chylopoetic viscera or stomach.

We cannot always trace the remote causes of this species; but, it is usually produced by some morbid affection of the stomach, or of the collatitious viscera.

The most obvious and common cause is that of a surfeit, whether of eating or drinking. And there is no great difficulty in interpreting the means, by which this cause operates.

How the present species is thus excited.

The stomach, in the language of Mr. J. Hunter, is the great seat of general sympathy, and associates with almost every other organ in its action. The digestion of even an ordinary meal is a work of some labour to it, and especially in weakly constitutions; a greater degree of heat is regularly expended upon it during this process, and unquestionably also a greater degree of sensorial power; both which are taken from the system at large as from a common stock; and the consequence is, that, in infirm habits, a considerable degree of chill and debility are felt during this process, and other organs become torpid while the stomach is in a state of increased action. Hence infants and old persons sleep during digestion; delicate females feel a coldness shooting over their extremities; and those

of irritable fibres become flushed in the face, and show other signs of irregular action. Now if this be the case in the digestion of ordinary meals, what disturbance may we not expect during the digestion of a meal that overloads the stomach, and with which the stomach is incapable of grappling? what, more especially, when at the same time, by an immoderate use of wine or spirits, the brain becomes exhausted of its energy by the excess of stimulus applied to it? The general chill over the surface, which, in the digestion of an ordinary meal, is only felt by the weak and delicate, is here often felt severely, and sometimes amounts to a horripilation. The first stage of fever is hence produced: and as the heat and perspiration are most probably a necessary result of the first stage, a foundation is hereby laid for the entire paroxysm. With the re-action that ensues a greater degree of sensorial power returns; the general frame as well as the brain is roused to an increased energy; the diaphragm and its associate muscles, instinctively or remedially, contract, and the stomach disgorges its contents, or thrusts them forward half-digested into the duodenum.

[With respect to the foregoing hypothesis, that the heat and nervous influence of the whole system are diminished during digestion, because a part of the general stock is then withdrawn to the stomach, the editor scarcely need remark, that it is as improbable as it is destitute of proof. The various circumstances, which, in the preceding paragraph, are fancied to prove, or illustrate it, only show, that languor, chilliness, and flushings of the face occasionally take place during the process of digestion, which also sometimes causes a tendency to sleep. These facts, particularly the flushings, constitute so weak a support for the doctrine, that they need no serious refutation. Why should we not here be content with the simple truth, that excesses at table frequently give rise to ephemeral fever?]

Treatment.

The only and well-known mode of cure consists, in the first place, in imitating the above natural process of relief; in unloading the stomach of its mischievous freight by a powerful emetic, and the alvine canal of whatever portion of the heating and crapulous mass has passed into it, by a brisk cathartic. The fever hereby excited will often

GEN. I. SPEC. II. Ephemera acuta.

subside in a diurnal revolution; and no tendency to a return of the paroxysm be produced.

Sometimes becomes a cauma,

If the species before us, however generated, do not subside within this period of time, or a few hours beyond it, the disease becomes a cauma, or inflammatory fever of the continued kind, and consequently belongs to the genus ENECIA.

or assumes some other form.

There are, however, a few exceptions to this rule: for Forestus gives a case, in which the paroxysm led to a fatal hectic*: and Borelli gives another of equal singularity, in which it kept true to a triennial revolution, returning punctually once every three years†.

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## SPECIES III.

## EPHEMERA SUDATORIA.

### *SWEATING FEVER.*

TENSE PAINS IN THE NECK AND EXTREMITIES; PALPITATION; DYSPNŒA; PULSE RAPID AND IRREGULAR; HEAT INTENSE; INTOLERABLE THIRST; DROWSINESS OR DELIRIUM; EXCESSIVE SWEAT.

GEN. I. SPEC. III. Description.

I HAVE followed M. de Sauvages in introducing sweating-fever, the *ephemera maligna* of Borsieri‡, or Burserius, as he is more commonly called, and the *sudor Anglicus* of most foreign writers, into the present place.

Dr. Caius, who practised at the time of its appearance at Shrewsbury, and has written one of the best accounts of it extant, calls it "a contagious pestilential fever of one day." "It prevailed," says he, "with a mighty slaughter, and the description of it is as tremendous as that of the plague of Athens." And we are told by Dr. Willis, "that its malignity was so extreme, that as soon as it en-

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* Lib. I. Obs. 7. † Cent. II. Obs. 100.

‡ Institut. Med. Prac. 8vo. 4 tomes, Ven. 1782-5.

tered a city it made a daily attack on five or six hundred persons, of whom scarcely one in a hundred recovered." It was certainly a malignant fever of a most debilitating character, but without any tendency to buboes or carbuncles, as in the plague: though during some parts of its career as fatal. It ran its course in a single paroxysm*; the cold fit and hot fit were equally fatal; but, if the patient reached the sweating fit, he commonly escaped.

GEN. I. SPEC. III. Ephemera sudatoria.

Hence, the cure consisted in exciting the sweating stage as quickly as possible, and in supporting the system with cordials throughout the whole of the short but vehement course of the fever. At Shrewsbury, it continued to rage for seven months, and, during that period of time, a thousand fell victims to its violence. But after the discovery of the benefit of the sweating-plan, it was certainly far less fatal.

Mode of treatment.

It made its first appearance in London in 1480 or 1483: Caius says in the latter year, first showing itself in the army of Henry VII. on his landing at Milford-Haven. In London, to which however it does not seem to have travelled till a year or two afterward, it took up its abode with various intermissions of activity for nearly forty years. It then visited the continent, overran Holland, Germany, Belgium, Flanders, France, Denmark, and Norway; among which countries it continued its ravages from 1525 to 1530: it then returned to England, and was observed for the last time in 1551.

General history.

It commenced its attack with a pain in the muscles of the neck, shoulders, legs, or arms, through which a warm aura seemed to creep in many instances; and after these symptoms, broke forth a profuse sweat. The internal organs grew gradually hot, and at length burning, the pungent heat extending to the extremities; an intolerable thirst, sickness, and jactitation followed speedily, occasionally with a diarrhœa, and always with extreme prostration of strength, head-ach, delirium, or coma, and a wonderful wasting of the whole body. The sweat was tenacious, saburral, and of an offensive smell; the urine thick and pale; the pulse quick, often irregular; and the breathing labo-

* Holinshed, vol. viii. 4to. Lond. 1808.

GEN. I. SPEC. III. Ephemera sudatoria.

rious from the first. The modes of treatment were often puerile, and offer nothing instructive. A good constitution, and exposure to free air, seem to have been most successful in promoting a cure.

Dr. Caius asserts, that a thick noisome fog preceded the distemper, especially in Shropshire, and that a black cloud uniformly took the lead, and moved from place to place; the pestilence in a regular march following its direction. There may be some fancy in this: but it is an unquestionable fact, that the most fatal pestilences of ancient and modern times have been ushered in by stinking fogs or mists, or some other intemperament of the atmosphere, of which the reader will find various instances in the sequel of this work.

The disease is generally, however, supposed to have been produced by inclement harvests and vitiated grain, particularly wheat, which is less hardy than other grains and sooner infested with albigo (mildew), ustilago (smut), and clavus (ergot or spur). And in proof that this last was the actual cause, it is observed by Dr. Willan, that the contemporary inhabitants of Scotland and Wales, who fed on oaten or barley, instead of on wheaten bread, were not affected. Nevertheless, whatever was the primary cause, a peculiar miasm or contagion seems to have been generated by the disease itself, which chiefly contributed to its spread and continuance. For we are told concurrently by all the writers, that Englishmen, who withdrew from their own country into France and Flanders with the hope of escaping the attack of the disease, fared no better than their countrymen at home. To which Dr. Freind adds, that, while Englishmen abroad were thus subject to the contagion, foreigners and even the Scotch in England were rarely or never seized with it*; a feature that has been copied by Dr. Armstrong in his very forcible description of the complaint, which is perhaps better adapted for poetry, than for sober prose.

Englishmen only said to have been subject to it.

> Some, sad at home, and, in the desert, some
> Abjured the fatal commerce of mankind;
> In vain: where'er they fled, the fates pursued.
> Others, with hopes more specious, cross'd the main,

* Hist. of Physic, vol. ii. p. 533.

GEN. I.
SPEC. III.
Ephemera sudatoria.

To seek protection in far distant skies,
But none they found. It seemed the general air,
From pole to pole, from Atlas to the East,
Was then at enmity with English blood:
For, but the race of England, all were safe
In foreign climes; nor did this fury taste
The foreign blood which England then contained *.

Something may, perhaps, be set down to the score of a national diathesis; but, without examining very closely into the accuracy of this wonderful part of its history, we may at least indulge a hope, that this peculiar, most virulent and fatal contagion has long since worn itself out, and become decomposed; though it may be still only latent, and waiting for its proper auxiliaries once more to show itself in the field †.

It is said, indeed, by Dr. Coste, the learned editor of Dr. Mead's works in French, that the disease continued to manifest itself occasionally as an epidemic in Picardy; but that, instead of terminating in a single day, it ran on to the third, fifth, and sometimes even to the seventh. It is hence sufficiently obvious, that the two fevers, though possessing many points of resemblance, are not precisely the same. Yet M. Bellot, in his thesis "An febri putridæ Picardii SUETE dictæ, sudorifera?" has maintained Dr. Coste's opinion.

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* Art of Preserving Health. B. III.
† Navier, Maladies Populaires, &c.

# GENUS II.

## ANETUS.

## *INTERMITTENT FEVER. AGUE.*

PAROXYSM INTERMITTING, AND RETURNING DURING THE COURSE OF THE DISEASE: THE INTERMISSIONS GENERALLY PERFECT AND REGULAR.

GEN. II. UNDER the preceding genus, the remote cause, whatever it consists in, lays a foundation for not more than one paroxysm. In the genus before us, the cause introduces a tendency to a recurrence of the paroxysm from the first; and, in most cases, with an interval that continues true to itself as long as the disease lasts. I say in most cases, because we shall see presently that, when intermittent fever has raged very extensively, it has not unfrequently established a type of one kind in one person, and of another kind in another; whilst, in the same patient, quotidians have changed to tertians, tertians to quartans, quartans to quotidians, and all of them in a few instances to continued fever, in the most capricious and anomalous manner.

Type sometimes varies.

United with remittents by Cullen.

Dr. Cullen unites intermittents and remittents into one section of fevers, merely distinguishing them as intermittents with an interposed apyrexy, and intermittents with remission alone: and, as already observed, he makes it a part of the pathognomic character of both that they are derived from marsh-miasm—*miasmate paludum ortæ*—as though there were no other cause of their production, whence Dr. Young gives to intermittents and remittents the common name of *paludal* fever.

How far this union is well founded.

The only ground then, assumed for this union of intermittents and remittents, is the supposition, that the cause which generates them is single, common to the two, and never generates any other fever. Now, although the febrile miasm, issuing from marsh-lands, is by far the most com-

mon cause of intermittents, it is by no means the only cause; for we find intermittents, like all other species of fever, produced from various sources; existing in hot countries as well as in cold, in high lands as well as in low lands, sporadically as well as epidemically; sometimes excited by sympathy, sometimes by contagion. Even in tertians, Dr. Cullen is obliged to admit of instances in which other agents are necessary; but then, says he, they are only *co-agents*, and would not operate alone. "*Has potestates excitantes pro parte principii hîc admittimus, licet neutiquam excitassent*, si miasma paludum non antea applicatum fuisset." But this is the very point of controversy; for, in many instances, they produce the disease where marsh-miasm cannot be suspected. I have seen an isolated case of a regular tertian on the highest part of Islington; and another on the dry and gravelly coast of Gosport, a situation so healthy that all the inhabitants escaped, when in the year 1765 a most fatal and epidemic fever, originating unquestionably from the miasm of swampy grounds, pervaded the whole island of Portsea, situate at not more than a mile distant on the other side of the water, and exhibiting, in different individuals, and often in the same person, all the diversities of the intermittent, remittent, and continued type. Dr. Fordyce affirms, that he has seen an intermittent communicated by infection, meaning the miasm from human effluvium; and where the yellow fever has long existed, or become widely diffusive, this is common. Where it arises from sympathy or organic affection, the case is still clearer. "Two children," says Mr. J. Hunter, "had an ague from worms, which was not in the least relieved by the bark; but by destroying the worms they were cured. We have in like manner agues from many diseases of particular parts, more especially of the liver and the spleen, and from an induration of the mesenteric glands*."

GEN. II. Anetus.

Intermittents from other sources than marsh-miasm.

[Connected with the cause of agues, the following question is interesting: why should intermittent fever have been more common in and around London during the last five or six years, than it was twenty or thirty years

* On Blood, part II. ch. iv. p. 411.

GEN. II. Anetus.

ago, when it was scarcely ever met with in the metropolis, except in persons who came with it from marshy districts? In the last two years the editor has attended not less than six cases of ague in the King's Bench and Fleet prisons; and several of his professional friends have mentioned to him other examples in the highest parts of the city. These facts are certainly in favour of the author's doctrine, that intermittent fever may arise from other causes besides marsh-miasmata.]

Sometimes found in highlands, while lowlands escape.

But one of the most singular and convincing proofs, that the decomposition of marsh-lands is not essential to the production of intermittent fever, is to be found in the epidemic intermittent of 1780, as described by Sir George Baker, and which we shall have occasion to advert to more particularly hereafter; for, during this, the intermittent harassed very extensively the elevated parts of Lincolnshire, while the inhabitants of the neighbouring fens were free from its ravages*. And, in like manner, the dry and healthy climate of Minorca is sometimes attacked with remittent or intermittent fever, while Sardinia, proverbial for its insalubrity and febrile epidemics, escapes†.

Illustrated in modern Greece.

"In the year 1812," says Dr. Maçmichael, "I was detained several months at Trichiri, a small sea-port in the mouth of the gulf of Volo in Thessaly. The town is built on a dry lime-stone rock, but it is notorious for *malaria*. During my stay here, I made an excursion to visit the celebrated pass of Thermopylæ, and slept one night near the marshy district in that neighbourhood. On my return, the friends whom I had been waiting for arrived from Athens, and we all embarked on board a Greek vessel, to cruize in the Archipelago. On the following day, I was seized with a most severe fit of the ague, and, at the same time, a servant belonging to the party, suffered a similar attack. It might be said that I had caught my intermittent at Thermopylæ, but the servant had not quitted the dry rock of Trichiri, upon which he had remained more than a week‡." In like manner, Sir Gilbert Blane informs us, that, while the

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* Med. Trans. vol. iii. art. xiii.

† Cleghorn, Disease of Minorca.

‡ New View of the Infection of Scarlet Fever, &c. 8vo. 1822.

village of Green Hithe, nearly on a level with the marsh of Northfleet, is unaffected with intermittent fevers, the adjacent hills suffer considerably from them: and he refers to other anomalies of the same kind *. GEN. Anetus. Northfle

To unite remittents, therefore, with intermittents, from an idea of their having a single and common origin, is to depart from the clear line of symptoms into a doubtful region of etiology. If intermittent ought to be separated (as unquestionably they ought) from continued fevers, so ought remittent to be separated from intermittent. To say that intermittents often run into remittents is to say nothing, for remittents as often run into continued fevers; and it is now an established doctrine, that there is no continued fever whatever without occasional remissions. In effect, all fevers have a tendency to run into each other, and many causes are perhaps common to the whole. The difficulty is in drawing the line: yet a like difficulty is perpetually occurring to the physiologist in every part of nature; and equally calls for discrimination in zoology, botany, and mineralogy: and Dr. Parr has correctly observed, that "if a *specific* distinction can be established in any branch of natural history, it must be in the separation of remittents from intermittents." Vogel unites remittent with continued fevers, to which Cullen, rightly enough, objects; but the former has as much reason on his side, as the latter has for uniting them with intermittent. Sauvages, Linnéus, Sagar, and most modern writers, correctly distinguish each from the other. It must nevertheless be admitted, that marsh-miasm is by far the most frequ cause of intermittents; and hence the frequency an verity with which they visited our own country in ere teenth and seventeenth centuries, before the lo y the artificially drained of their moisture, and con which atmosphere of its taint: during the forme n London Dr. Caius tells us, that the mortality fro e dead; and was such, that the living could hardly raged like the Bishop Burnet, that at one time, 1 plague. Hence n sufficien ground Cullen's rangeme

p. 111.

* Select Dis

GEN. II. Anetus.

Intermittents generally true to their type in the same person,

When an intermitting fever or ague is, by the operation of marsh-miasm, or any other cause, once introduced into the system, and has once discovered its type, or given an interval of a particular measure between the close of the first and the commencement of the second paroxysm, it continues true, as a general rule, not merely to the same measure or extent of interval, but to the length and severity of paroxysm, through the whole course of the disease; the character of the cold stage determining that of the hot, and both together that of the sweating stage; and the paroxysm ceasing because it has completed its career. But the first interval, like the first paroxysm, which regulates the rest, is of different duration in different cases: of the reason of this difference we know nothing; sometimes it seems to depend upon the season or the temperament of the atmosphere, operating upon the febrile miasm that is diffused through it, and all who have agues in the same place, or at the same time, have them of the same kind. Sometimes, on the contrary, it seems chiefly to depend upon the time of life, the idiosyncrasy, or the particular condition of the constitution, for, as already observed, different individuals even in the same place and under the same roof exhibit different types. But, upon this subject, we have no clear information.

but occasionally vary in different individuals.

Nevertheless, whatever may be the cause of this difference, it lays a good foundation for dividing the intermittent genus into distinct species, and the five following are sufficient to comprise all its principal diversities:

| | | |
|---|---|---|
| 1. | ANETUS QUOTIDIANUS. | QUOTIDIAN AGUE. |
| 2. | ——— TERTIANUS. | TERTIAN AGUE. |
| 3. | ——— QUARTANUS. | QUARTAN AGUE. |
| 4. | ——— ERRATICUS. | IRREGULAR AGUE. |
| 5. | ——— COMPLICATUS. | COMPLICATED AGUE. |

As the connexion between all these is peculiarly close, and they occasionally run into each other's province; and more particularly as the same mode of treatment is common to the whole, it will be most convenient to defer the general history and praxis till we have taken a survey of these species in their respective definitions and the varieties they often exhibit.

It may, however, considerably assist the student, and simplify his pursuit in acquiring a knowledge of their characters, to attend to the three following remarks:— GEN. II. Anetus.

Firstly, the shorter the intermission, the longer the paroxysm. Axioms in intermittent fevers.

Secondly, the longer the paroxysm, the earlier it commences in the day.

Thirdly, the more durable the cold fit, the less durable the other stages.

Thus, the quotidian has a longer paroxysm and a shorter interval than the tertian; and the tertian a longer paroxysm and a shorter interval than the quartan. And thus again, while the quotidian has the longest duration, it has the slightest cold stage; and while the quartan has the shortest duration, it has the longest cold stage. It is also the most obstinate to cure. Illustrated.

Each of these species, however, admits of considerable variations: for sometimes we find the paroxysm protracted beyond its proper period; sometimes anticipating, and sometimes delaying its proper period of return. In other cases, we find each of these species catenated with or giving rise to foreign symptoms or other diseases. And we also meet with a peculiar variety of the quotidian ague, in its being sometimes limited to a particular part or organ, in which case it is usually accompanied with very distressing pain. All the species subject to varieties:

The most irregular of all the species is the fourth, for this is sometimes found to deviate from all the three rules I have just laid down; but particularly in the greater length of its interval, which is sometimes double or even treble that of the quartan, whose interval of seventy-two hours is the longest of the three more disciplined species; it is hence found under the various forms of a five-day, a six-day, a seven, eight, nine, and even a ten-day ague; and sometimes is so extremely vague as to bear no proportion whatever between the violence of its paroxysm, the duration of its stages, and the period of its return. particularly the fourth.

The fifth species is distinguished from the rest by its peculiar complexity, consisting of double tertians, triple tertians, unequal tertians, duplicate tertians, together with as many varieties of the quartan type; the nature and key of which will be more particularly noticed under the species itself.

## SPECIES I.

## ANETUS QUOTIDIANUS.

### *QUOTIDIAN AGUE.*

INTERMISSION ABOUT EVERY TWENTY-FOUR HOURS: PAROXYSM COMMENCING IN THE MORNING; USUAL DURATION UNDER EIGHTEEN HOURS.

GEN. II. SPEC. I.

Resembles the double tertian.

How distinguished from it.

THE genuine quotidian is of less frequent occurrence than the other species; but it has a considerable resemblance to that variety of the complicated intermittent, which has generally been denominated a double tertian, and with which it is often confounded. It is distinguishable, however, to an attentive eye by the regularity of its paroxysms, which are true themselves on every return; while in the double tertian the alternate paroxysms only are true to each other, as we shall have occasion to observe more particularly in the proper place. The quotidian, like the tertian and quartan, has sometimes been epidemic.

The quotidian intermittent is occasionally limited in its attack to a particular part, and is occasionally connected with other affections. It deviates also now and then from its common rule, in having an imperfect intermission, and in precipitating or procrastinating every subsequent paroxysm: and, hence, affords us the following varieties:

| | |
|---|---|
| α Partialis. | Partial quotidian. |
| β Comitatus. | Catenating quotidian. |
| γ Protractus. | Protracted quotidian. |
| δ Anticipans. | Anticipating quotidian. |
| ε Cunctans. | Retarding quotidian. |

α A. quotidianus partialis.

In the PARTIAL QUOTIDIAN, the febrile attack is confined to a particular part or organ, and usually accompanied with distressing pain.

Under this modification, sometimes one side of the body has suffered, while the other has escaped; sometimes one

or both eyes; but more generally the whole or half the head, not unfrequently resembling cases of cephalæa, and particularly that species of it which is called hemicrania. GEN. II. SPEC. I. Anetus quotidianus.

In the CATENATING QUOTIDIAN, the disease associates with or gives rise to various foreign symptoms or other diseases. And, hence, is often found in union with rheumatic affections, particularly lumbago and sciatica. Sauvages quotes a case, in which it associated with daily attacks of a frightful epilepsy*. And Dr. A. Munro narrates a similar instance, though less severe, and alludes to several others†. Torti has made a collection of numerous examples of this variety, and has united them into one family, under the name of febres intermittentes comitatæ. Galen has described one or two of them under the name of epiala. β A. quotidianus comitatus.

In the PROTRACTED QUOTIDIAN, the intermission is inordinately short, or imperfect. In the former case, the paroxysm is lengthened beyond the usual period of eighteen hours; and, in the latter case, it does not so completely subside, as to leave the intermission totally clear of febrile symptoms. On which last account, the Latins described this variety under the name of quotidiana continua; and the Greeks under that of amphemerina. γ A. quotidianus protractus.

In the ANTICIPATING QUOTIDIAN, which is the name given to our FOURTH VARIETY from Dr. Fordyce, the paroxysm precedes its antecedent period usually by about two hours, and continues the same fore-march at every recurrence; so that the accession may hereby be thrown into any hour of the day or night. This form is denominated a *febris subintrans* by Professor Frank and various other writers‡. δ A. quotidianus anticipans.

The RETARDING QUOTIDIAN, which, like the last, has been particularly noticed and named by Dr. Fordyce, forms a direct counterpart to the anticipating; the paroxysm delaying its antecedent period usually by about two hours, and continuing the same delay at every recurrence; ε A. quotidianus cunctans.

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* Class II. Febr. Intermit. Quot. Spec. IV.

† Edin. Med. Essays, vol. ii. art. xix.

‡ J. P. Frank, De Curandis Hominum Morbis Epitome, tom. i. p. 41. Mannhemii, 1792.

GEN. II. SPEC. I. Anetus quotidianus.

so that here also the accession may be thrown into any hour of the day or night.

There are few diseases, moreover, in which the quotidian is not occasionally to be found as a symptom; but it occurs especially in hysteria, catarrh, gout, peripneumony, ischury, quinsy, and several species of odontia.

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## SPECIES II.

## ANETUS TERTIANUS.

### *TERTIAN AGUE.*

INTERMISSION ABOUT FORTY-EIGHT HOURS: PAROXYSM COMMENCING AT NOON: USUAL DURATION UNDER TWELVE HOURS.

GEN. II. SPEC. II. Description.

THE tertian ague, the tritæus of the Greeks, occurs most frequently in the spring and summer months; though there is a spurious kind that shows itself in the autumn. The chill, during the cold fit, is intense, with convulsive shivering, rigidity, and gnashing of the teeth. It is, however, of shorter duration than that of the quartan, and sometimes passes off in less than half an hour; and is succeeded first by nausea or vomiting, and afterwards by a pungent penetrating heat, frequent respiration, urgent desire for cold drink, wakefulness, and headach, sometimes delirium. At length, a moisture on the skin, gradually advancing to a copious sweat, breaks forth, the urine commonly deposits a lateritious sediment, and there is often some looseness of the bowels. The entire paroxysm sometimes ceases in six hours, but more generally extends to eight or ten; if it exceed twelve, as it does occasionally in the autumn, the disease forms the spurious tertian I have just alluded to. As the quotidian is mostly common to infants and persons of delicate habits, the tertian chiefly affects those of riper years or of firmer fibres, and especially persons of a bilious temperament. It was the opinion of Hippocrates, that the tertian ague, if left to nature, would

Most common in the hale and robust.

Duration as calculated by Hippocrates.

run itself out in seven paroxysms; and Vogel adds, that, when this is the case, there is usually the appearance of a dry scabby eruption about the lips on the fourth or fifth paroxysm. But the period, pointed out by the former, does not hold in our own day; and the disease has often continued obstinate in spite of cutaneous eruptions, not only about the lips but over the body. Sydenham asserts, that, in the autumn, in which, however, a genuine tertian is rarely to be met with, its ordinary natural course is double the term allotted by Hippocrates, or rather that the term of its paroxysms amounts to the space of fourteen days. The tertian exhibits occasionally the two following varieties:

Gen. II. Spec. II. Anetus tertianus.

| | |
|---|---|
| α Comitatus. | Catenating tertian. |
| β Protractus. | Protracted tertian. |

to both which the explanation, already given under the same terms in the preceding species, will equally apply. As an associate disease, it is chiefly to be found united with syncopal and soporose affections, indicating some oppression of the brain; or with cholera, or dysentery, mostly indicating irritation or congestion in the liver.

Explanation under the preceding species will apply to these varieties.

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## SPECIES III.

## ANETUS QUARTANUS.

### *QUARTAN AGUE.*

INTERMISSION ABOUT SEVENTY-TWO HOURS: PAROXYSM COMMENCING IN THE AFTERNOON: USUAL DURATION UNDER NINE HOURS.

This, which is also the quartana of Celsus, is the tetartæus of the Greek writers. It is rarely found in the vernal season, but is common in the autumnal; in which quarter, also, it is far the most obstinate of all the species, and especially if, as Celsus observes, it show itself only a short time before the commencement of winter. Its chief sub-

Gen. II. Spec. III. General character,

GEN. II. SPEC. III. Anetus quartanus.

jects and sufferers are those of advanced years, and of a melancholic habit; for children and young persons, who principally feel the effects of the two former species, are but little obnoxious to it. It commences usually about or a little before five o'clock in the afternoon. The cold fit is less vehement than in the tertian, but of longer duration, and will sometimes continue for two hours, but usually without sickness or diarrhœa. It yields to a heat that is rather troublesome from its dryness than from its intensity, and which is rarely succeeded by a sensible perspiration. There is a heaviness or dulness in the head, rather than acute pain; and often during the intermediate days, a sense of soreness over the body, as though it had been generally bruised, which strikes through to the bones. It is here also we principally meet with parabysmic tumours, and especially of the spleen and liver: in the former of which organs they are vulgarly called *ague-cakes*.

and effects.

The quartan offers the following varieties:

| | |
|---|---|
| α Comitatus. | Catenating quartan. |
| β Protractus. | Protracted quartan. |
| γ Anticipans. | Anticipating quartan. |
| δ Cunctans. | Retarding quartan. |

Of all which an explanation will be found, by turning to the same varieties under the first species.

From the tendency which this species has to affect the abdominal viscera, it is often met with as a symptom in diseases of the spleen, liver, and various adjoining organs. And hence it occasionally interchanges with dysentery, and particularly when the latter is a prevailing or epidemic disease. This remark will also apply to the preceding species; and, under the one or the other form, was often found exemplified in the fatal dysentery that ravaged a large part of Ireland in the year 1818*; and which still more frequently occurs in tropical climates†.

Often accompanies or alternates with other diseases.

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* Cheyne, in Dublin Hospital Reports, vol. iii.

† Climate and Diseases of Tropical Countries, &c. by C. Chisholm, M.D. p. 52. Lond. 1822.

## SPECIES IV.

## ANETUS ERRATICUS.

### *IRREGULAR AGUE.*

INTERMISSION AND PAROXYSM POSSESSING LITTLE REGULARITY: THE FORMER MORE THAN SEVENTY-TWO HOURS.

GEN. II. SPEC. IV.

WE have already perceived, that there is occasionally some degree of irregularity in all the preceding species, least of all, however, in the quartan. And hence all the above might, in such instances, be named erratic. But the peculiar character of the present species is, that the duration of the intermission exceeds that of all of them; on which account it can never be confounded with any of the rest.

Distinctive character.

The chief varieties are the following; which, however, might be considerably enlarged, but it is unnecessary. They are principally taken from Sauvages and Vogel; and, for other authorities, the reader may turn to the volume of Nosology.

| | |
|---|---|
| α Quintanus. | Five-day ague. |
| β Sextanus. | Six-day ague. |
| γ Septanus. | Seven-day ague. |
| δ Octanus. | Eight-day ague. |
| ε Nonanus. | Nine-day ague. |
| ζ Decimanus. | Ten-day ague. |
| η Vagus. | Vague and irreducible. |

Several of the above have occasionally persevered with great obstinacy; in some instances, for upwards of two years without ceasing. The last variety is equally irregular as to the violence of its paroxysm, the duration of its stages, and the period of its return. Several of Sauvages's species of hemicrania may be properly referred to this place, and especially those which, by some writers, have been denominated INTERMITTENTES LARVATÆ, or disguised intermittents.

Sometimes peculiarly obstinate.

## SPECIES V.

## ANETUS COMPLICATUS.

### *COMPLICATED AGUE.*

PAROXYSMS INTRICATE, MULTIPLICATE, OR BOTH.

GEN. II. SPEC. V. Analysis of its intricacy.

THERE are numerous examples of ague which, to an inattentive eye, are as irreducible to any regular order as those which belong to the last variety of the preceding species; but which, when minutely examined, are found, however intricate, to be composed of types, not that uniformly resemble each other, but that recur in alternate sets, every set being true to itself, while it differs from that, with which it alternates in the duration of its intervals, or of its paroxysms, or of the time of its accession. And hence, although in some shape or other, most of them return perhaps every day, and are often mistaken for irregular quotidians, they are, in fact, double or triple tertians, or quartans, discovering their real nature by these alternating distinctions.

The following are the chief varieties:—

| | |
|---|---|
| α Tertianus duplex. Double tertian. | The paroxysms of the one tertian occurring in the intermissions of the other: and the two sets evincing a difference of duration or of violence. |
| β Tertianus triplex. Triple tertian. | A double tertian, taking place as above; but one of the sets having regularly two paroxysms on the day of its return, and the other, one alone. |
| γ Tertianus impar. Double unequal tertian. | The one set evincing a more perfect, the other a less perfect, intermission. |

| | | |
|---|---|---|
| ♂ Tertianus duplicatus. Duplicate tertian. | A single tertian with two paroxysms on the regular day of attack, the intervals being of ordinary duration. | GEN. II. SPEC. V. Anetus complicatus. |
| ♀ Quartanus duplex. Double quartan. | The paroxysms of the one set occurring in the intermissions of the other; and evincing a difference of duration or of violence: with an interval on the third day alone. | |
| ♃ Quartanus triplex. Triple quartan. | Consisting of a single quartan with regularly returning paroxysms; while each of the intervening days is marked with a slighter or separate attack. | |
| ♅ Quartanus duplicatus. Duplicate quartan, | Consisting of a single quartan; with two paroxysms on the regular day of attack: the intervals being of ordinary duration. | |
| ♄ Quartanus triplicatus. Triplicate quartan. | Consisting of a single quartan with three paroxysms on the regular day of attack: the intervals being undisturbed and of ordinary duration. | |

Having thus distinctly noticed the several species and chief varieties of intermittent fever, I shall proceed to offer a few remarks upon its general history and medical treatment.

General history of intermittent fevers.

Whenever the accession of an intermittent is violent, be its type what it may, it is sometimes attended with very alarming symptoms, as syncope, apoplexy, vehement spasms over the whole system, or a coldness or torpor which threatens death. Yet, when not violent, nor of very long duration, especially when of the tertian type, it is often serviceable to the general health, and carries off many disorders of other kinds: Dr. Fordyce affirms, that he has seen it of considerable use in curing or alleviating

GEN. II. Anetus. chronic rheumatism, habitual indigestion, cutaneous eruptions, protracted inflammations, epilepsies, and hysteria*. And his assertion is corroborated by other authorities†.

Depuratory fever of Frank. It is to this kind of remedial fever, that Professor Frank gives the name of *depuratory*‡.

Duration uncertain. The duration of intermittents is of great uncertainty. The vernal agues generally disappear with the advance of summer: the autumnal are more obstinate, and especially the quartan §. Where they have remained long, and have become habitual, even their removal must be attempted with great caution; for, when abruptly suppressed, they have been known to lay a foundation for a host of other maladies, often of a more fatal description, as paralysis, various visceral affections, and even sphacelus.

Has continued through a great part of life: Ludolf gives an instance of an eight-day ague (anetus *erraticus octanus*) continuing for eighteen years; yet this was probably a double quartan; while we have abundant examples of a continuance of the regular quartan for nine‖, twelve¶, eighteen**, twenty††, twenty-four‡‡, and thirty years §§, and one instance of its lasting for not less than forty-eight years‖‖. It is in this species therefore, that we chiefly meet with those congestions in the spleen

and formed ague-cakes and other congestions. which are called ague-cakes, as also with scirrhosities in the liver, pancreas, and other abdominal organs, which by Bonet, Swalwe, Senac, and other writers, have been regarded as causes of the disease, but by Van Hoven, and all the pathologists of the present day, are more correctly resolved into effects.

Has been found congenital. Schenck gives a case of congenital quartan, or in which it appeared in an infant immediately after birth¶¶; and Paullini another, in which, though not strictly congenital,

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* On Fever, Diss. II. p. 16.

† Salmuth, Cent. II. Obs. 14.—Ephem. Nat. Cur. Dec. III. Ann. III. Obs. 30.

‡ J. P. Frank, de Curandis Hom. Morb. Ep. tom. i. p. 48. § Ib. p. 44.

‖ Eph. Nat. Cur. Dec. II. Ann. VIII. Obs. 45.

¶ Avicenna, Fen. I. Lib. IV. Tr. II. cap. vi.

** Madai, Von Weekselficbern. sect. 144.

†† Eph. Nat. Cur. Dec. III. Ann. IX. and X. Obs. 51.

‡‡ Marcellus Donatus, Lib. III. cap. xiv. p. 291.—Pontanus, De Febr. Conel. L. VIII.

§§ Binninger, Obs. Cent. V. N. 64. Wicrius, Obs. p. 37.

‖‖ Gabelchover, Cent. VI. Obs. 74.

¶¶ Obs. Lib. VI. N. 36.

it appeared in very early infancy*. But such examples are rare. Among other singularities, I may observe, that the accession has sometimes been so violent as to destroy the patient in the course of the first paroxysm, of which an instance will be found in Senac†, while, at other times, it has been so slight and rapid, that the entire paroxysm has run through its course in a minute ‡.

GEN. II. Anetus. Has destroyed in a single paroxysm. The paroxysm has been completed in a minute.

The character of the intermittent seems in a considerable degree to depend upon the age, or idiosyncrasy, of the individual, and the temperament of the atmosphere. We find also, that variations more usually take place in the quotidian, than in any other type, which we should, perhaps, ascribe to its occuring more frequently in early life, when the frame is more irritable; and to the debility, which the constitution suffers from this type above that of any other, in consequence of the greater length of its paroxysms, and the greater brevity of its intervals, by which means, the prostrated strength of the system has no time to rally.

Quotidians more variable than any other type.

In this metropolis, from causes which have not been handed down to us, and which, indeed, do not appear to have been traced at the time, intermittent fevers were more than ordinarily frequent from the year 1781 to 1785: and the remarks I have just made apply in an especial manner to all these. As a single example, let us select those of 1782, as described by Sir George Baker and Dr. Reynolds, in an article drawn up by the former with an admirable combination of learning and liberality, sound critical judgment, and inquisitive research.

Intermittents peculiarly frequent in London, from 1781 to 1785.

"The type of the fever of 1781-2," says Sir George, "was either tertian or quotidian; the former being more common in the first part of the winter; the latter, from the middle of February to the end of June. With respect to the former, NOTHING OCCURRED to my observation which is worthy of notice§." On the latter, Dr. Reynolds communicated to him the following information.

Sir George Baker's account of 1781-2, as communicated by Reynolds.

The quotidian fevers were irregular in their invasion, and uncommon in their appearance; and no cases resembled

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* Cent. I. Obs. 94. † Von Weekselfiebern, B. II. cap. vi.
‡ Reil, Memorab. Clin. vol. ii. Fasc.
§ Medical Transactions, vol. iii. Art. xiii.

GEN. II. Anetus.

each other, except in very few circumstances. The first attack generally commenced with a horror; but the subsequent paroxysms, though often beginning with a sense of cold, were chiefly without horror. The intermission was short and seldom perfect. The symptoms were very severe, and in many cases dangerous, and leaned strikingly to a typhous form. Great and sudden oppression of the head, anxiety, depression of spirits, a dry, parched tongue, yet less covered with hardened mucus than might be expected; a pulse low, quick, and intermitting; bowels variable; urine dark-red and clear, without any sediment, constituted the ordinary signs. Many had a low muttering delirium; two or three, a laborious respiration; a few, spasms and twitchings of the tendons; aphthæ appeared occasionally; and one patient exhibited symptoms of violently acute rheumatism. The bark was universally successful; and, "I was as much pleased," says Dr. Reynolds, "with its present efficacy, as I was in the year 1781 mortified by its extraordinary want of power. Half the quantity of it which I used on that occasion was sufficient on this."

General remarks hereon.

In other words, idiosyncrasy and atmospheric temperament were both peculiarly visible, and gave a peculiar character, in the one instance, to particular cases, and, in the other, to the general disease. In plethoric habits, the head was greatly oppressed, with a tendency to delirium. In those of a nervous or irritable disposition, the intermittent was connected with spasms and twitchings of the tendons. And those, disposed to rheumatism, had acute arthritic pains. The state of the atmosphere, and general character of the season, Dr. Reynolds has forgotten to notice: but we see evidently, and indeed he himself allows, that they gave a typhous impression to the epidemic; which, from the same, or from other causes, is also peculiarly distinguished by the easy victory it yielded to the use of the bark, as that of the preceding year was distinguished by its obstinate resistance to this medicine.

Sir George Baker's own account of 1780–1.

If we ascend a year higher, or to 1780-1, we shall meet with an equal diversity of symptoms. "These fevers," (intermittents), says Sir George Baker, "were in general no other than the common ague; but in the more inland counties of England, they were often attended with pecu-

liarities extraordinary and alarming. For the cold fit was accompanied by spasm and stiffness of the whole body; the jaws being fixed, the eyes staring, and the pulse very small and weak.—In many cases, delirium was added to spasm, under both which symptoms the patient laboured quite to the end of the paroxysm. And though the senses returned when the fever subsided, yet a convulsive twitching of the extremities continued, even in the intermissions, to such a degree, that it was not possible to distinguish the motion of the artery at the wrist.

GEN. II. Anetus.

Symptoms peculiarly severe.

"This fever had every kind of variety; and, whether at its first accession it were a quotidian, a tertian, or a quartan, it was very apt to change from one type to another. Sometimes it returned two days successively, and missed the third, and sometimes it became continual. I am not informed, that any died of this fever whilst it intermitted. It is certain, however, that many country people, whose illness had, at its beginning, put on the appearance of intermission, becoming delirious, sunk under it in four or five days. It is a remarkable fact, and very well attested, that in many places, WHILST THE INHABITANTS OF THE HIGH GROUNDS WERE HARASSED BY THIS FEVER, IN ITS WORST FORM, THOSE OF THE SUBJACENT VALLEYS WERE NOT AFFECTED BY IT. The people of Boston and of the neighbouring villages, in the midst of the Fens, were in general healthy, at a time when this fever was epidemic in the more elevated situations of Lincolnshire: and other examples of a like kind have already been noticed*. It is likewise singular, and worthy of notice, that, in many families, the female servants were nearly exempted from a disease which very few male servants, especially the labourers in the open air, escaped. But the distinguishing character of this fever was its obstinate resistance to the Peruvian bark; nor, indeed, was the prevalence of the disease more observable, than the inefficacy of the remedy. Though the quantities of the bark usually given were exceeded, the fit was apt to return, rarely altered, either with respect to the time of invasion, or the intenseness of the symptoms; and just as

Peculiarly variable.

Often raged in high grounds and not in low grounds.

Among females in the house rather than males abroad.

Obstinate resistance to the bark.

* Sir Gilbert Blane, Select Dissertations, p. 111. 8vo. Lond. 1822.

GEN. II. Anetus.

if no means had been used to prevent it. A drachm of the bark in powder was frequently administered every second hour, without averting the fit *."

Medical treatment. General character of remedies for intermittents.

In casting our eyes over the great diversity of medicines that have been employed for the cure of intermittents, we shall find, that, innumerable as they are, they may be arranged under two general heads, tonics and antispasmodics; as though, long before the time of Dr. Cullen, his two principles of the disease, debility and spasm, had been uniformly admitted and acted upon.

Antispasmodics and tonics with what views employed.

The antispasmodics, consisting chiefly of stimulants, sedatives, and relaxants, have been confined to the term of the paroxysm, with a view to weaken and shorten it; and the tonics, consisting principally of bitters and astringents, have been employed throughout the intervals, with a view of fortifying the system against a recurrence of the attack.

In discussing the medical treatment of intermittent fevers, it will be sufficient to limit ourselves to these two indications.

Pungent antispasmodics of Bergius.

It was a favourite practice with Bergius to anticipate the cold fit, constituting the accession of the paroxysm, by pungent stimulants, in the hope that, if he could successfully combat this first stage, he should gain a complete victory, not only over the individual paroxysm, but over all future incursions. His favourite medicines for this purpose were garlic, mustard-seeds, and capsicum. And he boasts of having, in numerous instances, completely succeeded with each of these; though he admits that the mustard-seeds answered best in vernal intermittents, but did not in general prove sufficient for the autumnal quartans. The Indian practitioners, I may here observe, employ chakka or ginger, and sometimes the sison ammi for the same purpose, and Dr. Chisholm has occasionally succeeded with scallions†. Bergius, however, placed his chief reliance on the capsicum, six grains of which he was in the habit of giving, combined with two scruples of bayberries in powder, "incipiente primo rigore;" and of repeating it every day, at the same hour, for three or four

Indian practitioners: Chisholm.

* Med. Trans. loc. citat.

† Climate and Diseases of Tropical Countries, &c. 1822, p. 53.

times in succession. And he assures us, that he has very frequently seen obstinate intermittents removed by this powder, and without any relapse. GEN. II. Anetus. Medical treatment.

The practice, however, has not been equally successful in other hands; not even when capsicum has been given in a much larger quantity, or exchanged for ammonia, treacle-mustard (*clypeola Jonthlaspi*), or black or white-pepper, the latter of which is only the former denuded of its outward tunic, mixed up with brandy or hollands. They have all, indeed, sometimes answered, but the result is uncertain; and, as was long ago observed by Van Swieten, if the medicine do not succeed upon a full dose, and especially when combined with ardent spirit, it will often extend its influence to the hot fit, and greatly exacerbate it; and not unfrequently convert an intermittent into a continued fever. Upon the whole, therefore, this plan is not to be recommended, however varied. The least pernicious material is the ammonia; but then it is also the least effective. Ineffective in other hands.

A large draught of cold water has been not unfrequently had recourse to for the same purpose, and also, in a few instances, with success. The object is, by taking it about half an hour before the cold fit is expected, to excite a strong re-action and powerful glow over the entire system against the time when the cold fit returns, and thus to preoccupy the ground; and, by disturbing the regularity of the type, to subdue the intermittent altogether. But this plan has, perhaps, more frequently failed than the preceding: and when the shivering or horripilation produced by the cold water has not been followed with a stimulant effect, as in delicate habits more especially, it has often continued so long as to run into the term of the febrile cold fit, and very considerably to increase its power. Ballonius relates a case in which it proved fatal *. Cold water as an antispasmodic.

The next division of antispasmodics, which have been directed against the paroxysm, and especially against the rigor with which it makes its onset, is sedatives: and of these the chief have been opiates, which, when given in the form of laudanum, in a dose of from thirty to forty Sedative antispasmodics, especially opium.

* Opp. tom. i. p. 193.

GEN. II. Anetus. Medical treatment.

drops at the commencement of the chill, has, in many cases of intermittents, been highly beneficial; diminishing the duration of the stage, and moderating its symptoms.

Trotter's use of opium.

Dr. Trotter says, that he practised this plan with general advantage in an epidemic intermittent that attacked the Vengeance, one of the channel fleet under Lord Howe: and adds, that, "if the first dose of opium did not produce a sensible relief and exhilaration of spirits in half an hour, he repeated it, and never found it necessary to go beyond a second dose." Sir Gilbert Blane adverts to the same plan, as pursued at Walcheren during the English expedition to that island, and with an equal success *.

We have already seen, however, that there is some cause or other, probably the peculiar temperament of the atmosphere at the time, that baffles on one occasion the remedy that has best succeeded on another. And hence opium has often failed in other intermittents in every form, but especially when given in the cold fit. And owing to this diversity of effect, Dr. Lind thought it most useful in the hot fit; and asserts that, if administered to the extent of twenty or five-and-twenty drops of laudanum half an hour after the beginning of the hot fit, it produced the advantage of shortening and moderating the heat, calmed the anxiety and head-ach, which are usual concomitants, expedited the sweating stage, made the paroxysms more regular, and sometimes stopped the fever altogether.

Lind's.

Relaxants as antispasmodics.

Other physicians have commenced with relaxants: and where these are selected, the antimonial preparations are to be preferred to ipecacuan. They tend more directly towards the surface, and, where it is useful to excite vomiting, which is often the case, they act sooner, and maintain the action longer, and hence make a double effort to accelerate the sweating stage. The antimonial preparations differ chiefly from each other by having the reguline part of the antimony they contain in a more or less fusible state; and their operation will often vary according to the quantity or quality of the acid they meet with in the stomach; and hence the different effect of the same preparation in different persons, and even in the same person at

Antimonials.

The same preparation often affects different individuals differently.

* Select Dissertations, &c. p. 105. Lond. 8vo. 1822.

different times. The rubinus *antimonii*, or antimonial febrifuge of Craanen, was at one time regarded as a specific in intermittents on the continent, and was in particular favour with Stahl, Dieterech, Vogel, and many other physicians of reputation; but it does not appear to be of superior efficacy, in any respect, to the antimonial powder of the London College. GEN. II. Anetus. Medical treatment.

The most efficacious practice which I have witnessed, consists in uniting relaxants with opiates; and, where this joint effort is pursued, ipecacuan may answer as well as any of the preparations of antimony. We cannot have, for this purpose, a more useful medicine than Dover's powder; and it should be commenced with much earlier, than is consistent with the usual practice, so as not to regulate the hot and sweating stages, but to anticipate the cold fit. And we may still farther add to the ingredients of the medicine a full dose of ammonia with great advantage; for, it is in this form, if in any, that we can employ stimulants with a certainty of doing little mischief, and very nearly a certainty of considerable benefit. In the case of a quartan in St. Thomas's Hospital which had lasted two years, Dr. Fordyce determined upon this plan; and prescribed a full dose of Dover's powder with a sweating draught of carbonate of ammonia two hours before the paroxysm was expected. It succeeded perfectly. A profuse perspiration anticipated the period of the cold fit, and hereby entirely prevented it; bark was next given freely, and this obstinate ague was cured in a few days*. Relaxants combined with opiates. Case successfully treated by Fordyce.

Whatever be the relaxant or sudorific employed, it should be assisted by plentiful potations of warm diluents, and by placing the patient between the blankets, instead of in the sheets of his bed: for, I have already had occasion to observe, that upon these auxiliary means depend, in many instances, the accomplishment of the object we have in view, without which the most urgent diaphoretic exerts itself to no purpose. Diluents and other auxiliary means.

The most important season, nevertheless, for medical operation is in the intermission of the paroxysms: since, however successful we may be in moderating the febrile Period of intermission chiefly to be depended upon.

* Edinb. Med. Comment. vol. vi. p. 359.

GEN. II. Anetus. Medical treatment.

attack, it is rarely that we can depend upon any plan, which may then be adopted, to prevent a recurrence of the fit.

Tonics, and their properties as bitters and astringents.

The opinion of mankind seems to have concurred in most ages, in regarding debility as either the proximate or predisponent cause of intermittents, since almost the only medicines that have been brought forward to guard against the recurrence of their periodic attacks have been TONICS, with the sensible qualities of bitterness or astringency, or of both.

In what way they act.

In what way these act upon the moving fibre at any time, and particularly in the disease before us, we cannot say with any degree of precision. The tone of the moving fibre depends unquestionably in some degree upon the state of the fibrous material itself, but perhaps in a much greater degree upon the state of the nervous influence. We have great reason for believing, that astringents, in producing tone, act upon the fibrous material itself, for we find them operating in like manner upon animal fibres both in a living and a dead condition. But whether, as Dr. Cullen conjectures, it be the part of bitters alone to act upon the nervous power or living principle, and especially in the very singular manner in which he represents them as acting, is a different question; and the present is not the place for entering upon it.

If we contemplate the brain and spinal marrow as the sources of nervous energy, we can readily conceive that the component parts of these organs, as well as of any other, may be invigorated by medicines that have a peculiar influence on their structure; and that, consequently, such organs may be rendered capable of distributing the nervous power in greater abundance, or of producing it in a more elaborate perfection. And we can also readily conceive, that such effects may be produced by both bitters and astringents, as well as by medicines that possess some other sensible qualities, though these are the most obvious in their operation. But should we, with Dr. Cullen, affirm that the same bitter, employed in the same proportion, produces both tone and atony, energy and debility; that it both cures the gout, and occasions it; that employed for a certain time it effects the former, and, after such time, the latter; and should we beyond this affirm, with him

Cullen's hypothesis unsatisfactory.

also, that the nervous energy is not the production, but an inherent power of the brain; that it admits neither of increase nor diminution; is changeable in its state, but unchangeable in its essence; becomes excited and collapsed, or rises and falls in its energy, but experiences nothing of the decomposition, or recruit of every other part of the living frame around it; we should travel into a labyrinth of incongruities, and only enlighten ourselves with a will-o'the-wisp. Dr. Cullen's system, like himself, is a work of no ordinary stamp; it is full of immortality, but mixed up with weak and perishable materials. GEN. II. Anetus. Medical treatment.

Of the remedies, appertaining to the one or the other of the two divisions we are now considering, those of astringents and bitters, the cinchona or Peruvian bark, which unites both qualities in itself, is on every account entitled to our first attention. Cinchona.

This valuable medicine, which some practitioners are apt to despise or think lightly of in the present day, has never been altogether without its opponents; and there are many facts respecting its operation, which, if not altogether anomalous, are of very difficult solution.

Peruvian bark, according to the authority of Don Joseph Villerobel, a Spanish physician noticed by Badus, was first brought to Spain in the year 1632; but here, as in every other country, it had for a long series of years to encounter the prejudices of the medical profession; and consequently was very rarely made use of, and unquestionably would have sunk into oblivion but for the activity of the Spanish jesuits, who continued zealously to recommend it, and to import large quantities of it from their brethren in South America. Through these means, it was at last recommended by Pope Innocent X., in 1661, as a medicine perfectly innocuous and salutary: and a Schedula Romana, drawn up under the sanction of the physician to his holiness, pointed out, in express terms, the time and proportion in which the bark was to be taken. Unfortunately the time stated was *frigore febrili incipiente*, "at the commencement of the cold fit:" and it being administered in this manner with only temporary benefit to the Archduke Leopold of Austria, a year or two afterwards, it immediately fell into great discredit with a very large and learned part of the medical community of Europe; and a most acrimo- History of its introduction into Europe.

GEN. II. Anetus. Medical treatment.

nious warfare was instantly waged in every quarter on the subject, in which the combatants on both sides seemed more desirous of victory, than of truth.

When introduced into England.

In our own country, the bark began to become popular about 1655. In 1658, Mr. Underwood, an alderman of the city of London, died while using it, and was instantly reported to have fallen a sacrifice to its power; and so prejudicial was the effect of this rumour, that Cromwell, who was attacked with an ague in the same year, was suffered to languish and at length to die without an exhibition of the bark, his physicians being afraid to make a trial of it, in consequence of the fatal accidents that had so lately accompanied its use: in the words of Morton, "nondum vires corticis in hoc veneno subigendo, saltem hic loci, comprobatæ erant*."

Begins to be countenanced.

In England, therefore, as well as on the continent, there was a great conflict of opinion. Dr. Prejean, who both preceded and succeeded Dr. Harvey as president of the College of Physicians, appears openly to have advocated its employment in 1658, according to facts adverted to by Sir George Baker in his admirable article on intermittent fevers†, from which these hints are chiefly drawn up. Dr. Brady, professor of physic at Cambridge, appears equally to have countenanced it; as does Dr. Willis, according to his own statement: while Dr. Morton professed himself inexperienced upon its virtues, and Dr. Sydenham was decidedly adverse to its use.

Candour of Sydenham.

Sydenham, however, was a man of reason and liberality. His prejudices, and especially those derived from the hypothesis, that a fever is a fermentation in the blood, raised by nature to throw off some peccant matter at the surface, and which ought not therefore to be checked in its course, however wise it may be to moderate it in its violence, were all at arms against the use of the bark under any circumstances: and the mischievous effects, to which he had been an eye-witness in some instances, and its total inertness in more, gave a sanction to suspicion, if it did not justify hostility. But he was determined to watch it for a still longer period through all its variable effects, and to abide by the

* Pyretolog. p. 17.

† Medical Transactions, vol. iii. art. xiii.

result when fairly cast up. He soon became sensible that it was, in most cases, a powerful engine; that, in many instances, it was highly serviceable; and that, in those in which it failed, the miscarriage was rather to be ascribed to some error in handling it, than to a want of power in the drug itself.

GEN. II. Anetus. Medical treatment.

Its progress checked by an improper administration;

Sydenham had sufficient ground for this last conclusion. The mode in which it was, at this time, usually administered, was in doses of two drachms given twice in the twenty-four hours; and, as already observed, the time selected for the purpose, was during the existence of the paroxysm. It is moreover highly probable, that it was sometimes considerably adulterated, from the difficulty of obtaining it in any considerable quantity.

by being often adulterated.

Its great scarcity at first.

In 1658, we learn from Sturmius, who warmly patronized its use, that pure bark was so scarce on the continent, that twenty doses of the powder were sold at Brussels for sixty florins, for the purpose of being sent to Paris; and that this order so completely exhausted the apothecary's stock, that he himself was incapable of obtaining any even at that price. And hence for the use of one patient, who was attacked with an obstinate intermittent fever in the month of February of the same year, he was obliged to wait till the June following before he could obtain a supply*. Nor was it less difficult to be procured at Brussels, than in many other parts of Europe; for Bartholine, then residing at Copenhagen, having received as a great rarity a present of three doses, or six drachms, of the powder, from some friends who had brought it from Italy, was induced to make a trial of it on a lady who had a quartan fever. Of this small portion the first dose, or two drachms, was rejected from the patient's stomach; and, in order to prevent a repetition of this accident, and consequently the loss of his entire stock, the administrator macerated his two remaining doses in wine for forty hours, and gave the infusion *during two successive paroxysms*. The only effect was, that the fever was changed from a double to a single quartan. And here the experimenter was obliged to stop, as having no more materials to pro-

* Febrifugi Peruviani Vindiciarum Pars prior, p. 84. Antwerp. 1659.

GEN. II. Anetus. Medical treatment.

ceed with*. But even in 1678, when the same pretext for sophisticating it no longer existed, Morton complains, that the bark offered for sale was become so inert, corrupt, and adulterated, that it was necessary to increase the proportion from two drachms, to one, two, or even three ounces for a single dose. And, thus given by wholesale, we cannot wonder, that still more mischief should result from its abundance than from its scarcity, whatever might be the purity or impurity of its quality.

Sydenham's regulations.

To guard against all the evils that seemed to accompany its use, Sydenham proposed to himself the following regulations:

Firstly, To be peculiarly cautious in the quality of the bark he employed; and to allow of no intermixture, whether from fraud or a view of increasing its virtue.

Secondly, To administer the bark in the intervals, instead of in the paroxysms of a fever.

Thirdly, To give it after the rate of two scruples every four hours, instead of two drachms twice a-day after the Schedula Romana.

Under these regulations, the bark seems to have acquired all the success, to which it has at any time pretended; and modern practice has added little to their value.

Administration in the apyrexy, by whom first suggested.

The most important of them is that which effected a change in the period of exhibiting the bark. But whether the merit of first suggesting this improvement be due to Sydenham, or to some contemporary of his, we cannot at present very accurately determine. He is, indeed, the only person who openly lays a claim to it, and asserts, that he was led to this alteration after deeply pondering the subject—diù multumque apud se agebat: yet Morton, who published his Pyretologia in 1692, only three years after the death of Sydenham, asserts, somewhat loosely indeed, that, during twenty or five-and-twenty years† he had been in the habit of giving this antidote, as he calls it, in every season of the year, and to persons of all ages and constitutions; that he had cured every species of intermittent with it quickly and radically; and had found it more expedient to give it in the intervals than in the fits. While

Morton's practice.

* Thomæ Bartholini Hist. Anat. et Med. Cent. v. Hist. L. Hafniæ, 1661.
† Pa. 114. 132.

Lister, who was contemporary with both Sydenham and Morton, and who treats neither of them with respect, directly accuses Sydenham, a few years after his death, of having copied his mode of giving the bark from the miserable mountebank Talbor, who was its inventor;—auctore suo, misero illo agyrtâ Talbor*. Talbor, or Tabor, however, is scarcely open to the stigma of being a mountebank. He concealed, indeed, his preparation of the bark, but he had been regularly initiated into a knowledge of medicine by an apprenticeship to an apothecary at Cambridge; was the most successful, and therefore the most popular employer of the bark in his day; acquired a higher reputation in this line of practice, than any other individual whatever; was appointed one of the physicians to Charles II. against all the influence of the college; was specially sent for to Paris to take the dauphin under his care; succeeded in curing him; and afterwards divulged his arcanum for a stipulated sum to Lewis XIV.; by which it was found to be an infusion of the powder of bark in port wine as a cordial.

GEN. II. Anetus. Medical treatment. Tabor's success, and reputation.

The best form of administering it used to be considered its powder, "potissima virtus in toto jacet," says Professor Frank. But it is often found, that the stomach will not bear it in this form; and hence, modern chemistry has been at work to provide various others: the best of which appear to be those, which consist of its essential principle, now sufficiently ascertained to be a peculiar bitter alkali, separated from the woody fibre, and neutralized into a salt by means of sulphuric acid. The French chemists have put us into possession of two distinct salts of this kind—QUININE and CINCHONINE, of which the former is the more powerful, and both appear to have been employed with great success in the removal of intermittent fevers, in cases where the stomach has uniformly rejected both the gross powder and the decoction†. The dose of the first for an adult may vary from two to five grains and half a scruple, and still more has been given without ill effects; of the second, the dose may be from ten grains to half a drachm.

Different forms and preparations. Its essential principle, a bitter alkali. Quinine and cinchonine.

* M. Lister Octo Exercitationes Medicinales de Cort. Peruv. exhibendi tempore.

† De Cur. Hom. Morb. Epit. tome i. p. 64.

GEN. II. Anetus. Medical treatment. Effects of an over-dose.

The ordinary ill effects from an over-dose are nausea, headache, and vomiting*. [It is related by M. Andral, that, in some cases of tertian ague, M. Lerminier gave between 16 and 17 grains of the sulphate the first day of the treatment. The fever was arrested, and no unpleasant symptom followed. In some other individuals, similarly affected, this medicine, in the dose of only a few grains, produced violent palpitations, oppression, globus hystericus, giddiness, and fugitive pains in the chest and abdomen. This he imputes to idiosyncrasy†. But, as Dr. Elliotson observes, quantities that can disagree are not required: five grains of the sulphate, every six hours, is the largest dose that can be necessary, at least in this climate; for, from the reports of Professor Speranza, doses of 12, 24, and 30 grains are common in Italy; and, in one case, 108 grains were given as a dose, before the fever was arrested. The medium dose, prescribed by Dr. Perrine, of Adam's Country, in America, is 8 grains every hour‡. Many cases of intermittent fever in England have been cured with three, two, and even one grain, every six hours§. Every case of ague, which the editor has met with in the prisons of the King's Bench and Fleet, has yielded to doses of two grains. Dr. Elliotson has also tried the simple quinine, the tonic properties of which he considers as corresponding to those of the sulphate. It never disordered the stomach, though given, in doses of ten grains every six hours. One fact, adverted to by the same physician is important, namely, that the foregoing medicines cure cases of intermittent fever, which resist bark, even when retained in the stomach and freely administered. In a later communication on this subject, Dr. Elliotson mentions having attended nearly 150 cases of ague, and treated all with the sulphate of quinine. Many were combined with so much inflammation in the abdomen, chest, or head, that venesection was necessary; some, with dropsy, and others, with chronic disease of the lungs, or liver; but, *every one was cured*. Having never found the

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* Magendie Formulaire, pour la Préparation et l'Emploi de plusieurs Médicamens, p. 49. Paris, 1822.

† Andral, Clinique Médicale, t. i. p. 488.

‡ See Edinb. Med. Journ. No. 91. p. 218.

§ Elliotson in Med. Chir. Trans. vol. xii. p. 56.

sulphate of quinine augment inflammation, or interfere with antiphlogistic measures, he has always given it under all circumstances, and adopted with it any other measures required by the symptoms. Some cases, generally quartans, would not yield to less than five grains every four hours; but this quantity never failed, after being exhibited a week or ten days. In London he finds, that the disease may be generally arrested *immediately* by the exhibition of ten grains at once, just before or after the paroxysm. Dr. Home, he remarks, found the bark much more successful after, than before the paroxysm; and this also is his own experience with quinine. He is convinced, that the best practice is, first to give ten grains, as soon as the paroxysm is over. Excepting in quartans, this almost always prevents the paroxysm next expected; and, if repeated daily at the same hour, often cures the disease. But, he says, it is sometimes necessary, in addition to these ten grains after the fit, to give small doses every six or eight hours, so as to make the whole quantity in twenty-four hours amount to a scruple or half a drachm*. From what has been said, it would appear, that the quantity of quinine and cinchonine, contained in any one kind of cinchona, is the test of the comparative virtue of the different species; that the absence of these alkalies in vegetables, which have been proposed as substitutes for cinchona, shows their difference, and accounts for their inferior efficacy; while others, in which these alkalies are found, may supplant the cinchona. Thus the experiments, made by M. M. Robiquet and Petroz prove the existence of an alkali, analogous to quinine, in the bark of *carapa*, which has been known in America to cure agues which had defied the power of cinchona†.

GEN. II. Anetus. Medical treatment.

Carapa contains a principle analogous to quinine.

From the investigations of M. de Martin‡, it appears, that when the sulphate of quinine is finely pulverized, mixed with cerate, and then applied to a blistered surface, it is soon absorbed, and thus a cure of intermittents may be performed; a fact, worth remembering in examples where the stomach is very irritable.]

Sulphate of quinine applied externally.

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* Elliotson in Med. Chir. Trans. vol. xiii. p. 464.

† See Quarterly Journal of Foreign Medicine, vol. iv. p. 68.

‡ See Revue Médicale, Septembre, 1827.

GEN. II. Anetus. Medical treatment.

It ought to be known, that one of the best preparations for a successful use of the bark is calomel in small doses, particularly in intermittent fevers. "I have known," says Dr. Baillie, "a good many cases in which bark alone would not cure in ague. In all of these cases, as far as I now recollect, when a grain of calomel was given every night for eight or ten nights, bark cured the ague in the course of a few days. This practice I learnt from my friend Dr. David Pitcairn*."

Cinchona not always effective, and why.

But as under whatever form, in whatever quantity, and at whatever time the bark is given, it is not found to be a specific, not only in every individual, but in every intermittent; we are again driven to a principle I have already ventured to lay down, that intermittents of all kinds are occasionally influenced in their character by idiosyncrasies or the temperament of the atmosphere. And it is hence of considerable importance to know what other medicines have the strongest claim to attention, when, from accidental circumstances, the best fails of its common effect.

Hence other febrifuges should be studied.

This, as we have already had occasion to observe, was the case in the singular intermittents that prevailed both in this metropolis and in the country in the year 1787, in which the bark seemed to have no energy whatever, notwithstanding that its genuineness was sufficiently tested and proved. In consequence of which the febrifuge powers of various other medicines were attentively studied and appreciated. In some instances other medicines were mixed with bark, and seemed to a certain extent to call forth its proper power; a mixture of bark and alum answered in some cases, but produced disappointment in others. "The crude sal ammoniac," says Dr. Petrie, who was physician to the hospital at Lincoln, "had not a more certain effect. Several women were cured in a hospital by what is called the Dutch remedy for an ague; which is compounded of the bark and cream of tartar, each two ounces, and sixty cloves powdered. A drachm and a half of this powder was taken every third hour. Yet this likewise frequently failed. We at last thought, that we had

Mixture of cinchona with other medicines.

Petrie's practice at Lincoln.

* Lectures and Observations on Medicine by the late Matthew Baillie, M.D. 1825. Unpublished.

fallen on a specific in the powder of bay-leaves, plucked from the tree and dried in the shade. It was given from one to two scruples in the beginning of the cold fit. This powder was very efficacious in preventing the fits in many cases, where the bark, in the largest quantity, had been unsuccessful. But almost all who used it had a relapse in the space of a fortnight, three weeks, or a month. One patient, just at the time the fit was expected, took sixty drops of the Thebaic tincture. On this he fell into a profound sleep, sweated profusely, and escaped the fever, not only then, but at two successive periods. Eight quartans in the hospital, and four in private practice, were entirely cured by one drachm of the theriaca andromachi, the same of the root of calamus aromaticus in powder, and fifteen grains of salt of tartar. This mixture was taken in warm ale or wine and water, an hour or two before the fit. Nevertheless I must confess, that I met with several cases where no medicine prevailed; and many patients, despairing of relief, left themselves to nature; some of whom went into a pulmonary consumption, jaundice, or dropsy. Many, whom I thought cured of quartans, lately relapsed. I have now on the hospital books four patients, ill of quartan fevers, who have received no benefit; and I have no hope left, but in a long course of deobstruent bitters, and tinctura sacra, aided by the approaching summer*."

GEN. II. Anetus. Medical treatment.

Morton's medicine, of one scruple of chamomile flowers, ten grains of salt of wormwood, and the same quantity of calax of antimony, given every sixth hour, is said to have subdued, in the metropolis, an obstinate tertian in two instances. And Dr. Heberden found, that two drachms of the powder of myrrh, taken just before the time of the expected fit, relieved a patient from an ague, which for a long time had resisted the power of the bark, though taken in very large quantities.

Morton's favourite remedy.

Heberden's.

The red-bark was now also tried for the first time: it was proved to be of unquestionably superior virtue to that in common use; but even a moderate dose of it so often oppressed the stomach and excited nausea and vomiting, perhaps produced by its containing a larger proportion of

Red-bark first introduced, but found oppressive:

* Med. Transact. vol. iii. p. 165.

GEN. II. Anetus. Medical treatment. but contains most quinine.

resin, that, writing at this very period, Sir George Baker tells us, "I have for some time avoided the use of it." It contains, however, by far the largest proportion of quinine, and is now usually selected for this purpose.

Other barks employed in India. Swietenia. Azedarach. Tellicherry.

In the East a variety of other astringent and bitter barks are also employed both by native and European practitioners, and apparently with considerable advantage; as that called, in honour of Van Swieten, *Swietenia febrifuga*, so warmly recommended by Dr. Roxburgh: that of the bead-tea (*Melia Azedarach*), and the Tellicherry bark. All these have been now tried in Europe, but with a far less success than in India.

Arsenic generally injurious as at first employed.

Arsenic was also tried in combination with opium. It is admitted that it often effected a cure; but was frequently productive of violent vomitings, colic, and dysentery. It seems however to have been given at this period in a somewhat rude and unscientific form. "Arsenic," says the distinguished writer whom I have just cited, "is mentioned in books as a febrifuge, but it is one of those substances of which we are not as yet so far masters, as to be able, by any art, to render it transferable from the list of poisons to our Materia Medica; and it cannot be deemed to be a proper remedy for an intermittent fever, whilst an intermittent fever is less formidable than arsenic." But to this substance we shall have to return presently.

Bitters employed since.

The chief BITTERS and ASTRINGENTS that have been called into requisition, independently of those already noticed, are, gentian, cascarilla, willow-bark, nux vomica and the leaves of the cherry-bay, or *prunus lauro-cerasus;* the chief ASTRINGENTS, tormentil, galls, and oak-bark; the bark of both species of the swietenia or mahogany tree; avens or caryophyllata (the *geum urbanum*, Linn.), the *Lycopus Europœus* of the same naturalist, called in Piedmont, where it is supposed to rival the bark, Herb China, alum, and several of the metallic oxydes.

Generally unite an astringent principle. And hence chiefly useful.

To all these a common remark may be applied, that, where they have been of real service, it has generally, though not in every instance, seemed to arise from their uniting the two qualities of a bitter and an astringent, and that they have rarely answered where there has been only one of these qualities to depend upon. Thus tormentil, one of the most powerful vegetable astringents we possess,

and gentian, one of our most powerful vegetable bitters, succeed so rarely alone, that no dependence is to be placed upon them; but when given in combination, they almost rival the virtue of cinchona, and have occasionally succeeded where the latter has failed. "Joined," says Dr. Cullen, "with galls or tormentil, in equal parts, and given in sufficient quantity, gentian has not failed in any intermittents of this country in which I have tried it *." GEN. II. Anetus. Medical treatment.

There is, however, a principle, independently of bitterness and astringency, that seems absolutely necessary to enter into conjunction with these, in order to give full efficacy to any medicine employed as a febrifuge in intermittents; and a principle that has hitherto eluded all research; [unless it be analogous to that of quinine, a principle similar to which has been detected in other barks besides the Peruvian.] If the cure depended upon the intensity of a bitter and an astringent quality alone, galls, oak-bark, and mahogany-bark ought to succeed better, not only than an union of tormentil and gentian, or chamomile and alum, which have also been found very serviceable, but than cinchona itself; which every one knows they do not; although, when Peruvian bark cannot be obtained, they become desirable substitutes. But the most useful possess some further unknown principle.

The nux vomica and Ignatius's bean (*strychnos nux vomica*, and *ignatia amara*, Linn.) combine, with an intense bitter, a most active narcotic virtue; and how far the last may be peculiarly opposed to a recurrence of that spasm on the extreme vessels, which constitutes the cold fit, it is difficult to determine. M. Bourieu † from his own practice strongly recommends the latter, and Paullini ‡ and Aaskow § the former. If Dr. Fouquier's remark be well founded, which we shall have occasion to notice more at large when treating of paralysis, that these poisons have a power of augmenting energy in debilitated muscular fibres, while they leave those in health unaffected, we can account for some part of the success which has been so vauntingly ascribed to them in the case of intermittents. But, notwithstanding that they have been for this purpose before the Nux vomica.

* Mat. Med. Part ii. Ch. ii. p. 72.
† Hist. de la Societé R. de Med. 1776. p. 340.
‡ Cent. III. Obs. 45. § Ant. Societ. Med. Hafn. tom. ii.

GEN. II. Anetus. Medical treatment.

public for upwards of a century, the infrequency of their use is a strong argument that they are not much entitled to commendation. "In a very small dose," says Dr. Cullen, "the faba Sancti Ignatii has the effect of curing intermittent fevers*. But whether he reports this from his own practice, or from that of others, we cannot exactly determine: nor does he tell us what is the small dose he refers to. I have tried the nux vomica to the extent of eight grains in powder every six hours for an adult under palsy, without any mischievous effect except a slight stupor in the head. And much beyond this we cannot proceed with prudence.

Fatal case from its use.

Hoffman gives the case of a girl of ten years of age, who was killed by taking fifteen grains of it, divided into two doses, for an obstinate quartan†.

Lauro-cerasus.

The lauro-cerasus was at one time, as we are told by Dr. Brown Langrish, a common medicine in his neighbourhood for the cure of agues‡, but he takes no notice of the dose or mode of administering it. Its properties are nearly the same as those of bitter almonds; and Dr. Bergius frequently prescribed an emulsion of bitter almonds with success in intermittents, in the quantity of a pint or two daily during the intermission; and it sometimes cured where the bark failed§. This is an authority worth attending to; and as the same medicines are said to have a peculiar power of resolving visceral obstructions, they have an additional claim to a cautious series of experiments. It is generally supposed, in the present day, that their poisonous property depends upon their containing a portion of native prussic acid; the taste of prussic acid, however, is not bitter, but sweetish and acrid. Yet it is chiefly the bitter we seem to want in the present instance; and if prussic acid could be separated from the bitter principle from which it appears to be distinct, we might be put into possession of a medicine of considerable importance.

Bitter almonds.

Their poison supposed to depend on their prussic acid.

Hence desirable to separate this from their bitter principle.

Metallic oxydes.

The only metallic oxyde, really worthy of notice, is that of arsenic; for although various oxydes of iron, mercury, zinc, and copper, have been tried, and occasionally extolled,

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* Mat. Med. part ii. chap. ii. p. 76.

† Philos. Corp. Hum. Morb. p. ii. cap. viii.

‡ Experiments on Brutes. See also Phil. Trans. No. 418. 420.

§ Mat. Med. p. 412.

none of them have proved so decidedly beneficial as to render it worth while to try them over again. GEN. II. Anetus. Medical treatment.

Mercury, as we learn from Sir James Johnson, was tried extensively some years ago at the Bocca Tigris in the East, on the crews of two ships of war, the Grampus and Caroline, in consequence of the stock of bark being exhausted. The paroxysms, he tells us, were invariably put a stop to as soon as the system was saturated; but he adds, that three-fourths of the patients thus treated relapsed as soon as the effects of the mercury had worn off; and this after three, and, in a few instances, four successive administrations, so as to excite ptyalism *. And hence mercury, even where it is successful, does not appear in this case to produce any permanent impression upon the system. Mercury.

Iron, though of little value in most of its forms, has been said of late to have succeeded completely in that of its prussiate. Dr. Zollickoffer has given various instances of this in a foreign journal, and places its powers above those of arsenic or bark. It must be tried however upon a much larger scale before it is entitled to an established reputation. The ordinary adult dose is about four grains, two or three times a-day, in a little sugar and water. Iron.

Arsenic, under various forms, has also been employed from a very early period †. It is, strictly speaking, an oriental medicine, and has been in vogue immemorially in India, and indeed all over the East, but especially among the Tamul practitioners, as a most powerful alterant, as we shall have occasion to notice more at large when treating of syphilis and elephantiasis. It was probably introduced into European practice by the medical students under the brilliant caliphate at Bagdad: and seems to have been first appropriated to the cure of intermittents by the Jewish physicians of Poland ‡. In Sir George Baker's time, we have seen that it was in extensive use, but productive of such very different results that, however successful it might prove occasionally, this distinguished pathologist thought it a worse evil than any ague whatever. At that Arsenic. Its use imported from India.

* American Medical Repository, July, 1822.

† Act. Med. Berol. Dec. I. tom. iii.

‡ Gilibert, Adversar. Pract. Prim.—Slevogt. Pr. de permissione Prohib. et prohibitione Permiss. Jen. 1700.

GEN. II. Anetus. Medical treatment.

period, however, it does not appear to have been tried in its most commodious forms, which are those of an arsenite or arseniate of potash. M. Macquer recommends the latter; Dr. Fowler, many years ago, introduced and gave abundant proof of the utility and general commodiousness of the former; and, under this modification, it has at length found its way into the Pharmacopœia of the London College, under the name of liquor arsenicalis. Sir Gilbert Blane tells us, that it was used with great success in our unfortunate expedition to Walcheren, where the stomach could not retain the bark: but was combined with opium, and, in most cases, with bitters and aromatics*.

Liquor arsenicalis.

Often decidedly useful, though not always.

The cases of success from the use of this medicine are so numerous, and its employment is now become so general, as to render it unnecessary to advert to particular authorities in proof of its febrifuge power. With many constitutions there can be no question that it disagrees very considerably; and there are numerous instances of its failure: but it is a medicine of real and inappreciable value in many diseases, and in none more than in intermitting fevers. Dr. Fowler advises it to be taken in doses of from two to twelve drops, according to the age and strength of the patient, once, twice, or oftener, in the course of the day: and the directions are so broad, and at the same time so much within limit, that no actual harm can occur from following them literally. It will, however, often be found advantageous to combine a few drops of tincture of opium with each dose, to guard against the vomiting and griping which it is sometimes apt to excite; and the bowels should be kept open by warm aperients during its use. Under the French Directory a similar preparation of arsenic formed a part of the political constitution of the day; for an edict was formally published, commanding that the surgeons of the army of Italy should, within the course of two or three days, cure the vast number of soldiers suffering from agues caught in the marshes of Lombardy, by the use of this medicine, under pain of military punishment.

Advantageously united with opium.

Remedial power of

It is a singular fact, and ought not to be passed by without notice, that since the establishment of the large copper-

* Select Dissertations, &c. p. 105. Lond. 8vo. 1822.

works which are now carrying on in Cornwall, the intermitting fevers which used to be almost constantly present in the neighbouring marshes, are now rarely to be met with in any shape. It should hence seem, that the atmosphere is armed with a specific by becoming impregnated with metallic oxydes or carbonates: and that Cornwall should be the spot recommended for change of air in many cases of chronic or other obstinate intermittents.

Gen. II. Anetus. Medical treatment. neighbouring copper-works. Explained.

The result of this general survey is, that the cinchona (including its preparations, quinine and sulphate of quinine) offers by far the best remedy for intermittents of every kind; that arsenic is its best substitute; and that where these fail, as fail they will occasionally, or if particular circumstances should prohibit their use, we must throw ourselves upon such other medicines as unite intrinsically, or by combination, a bitter and an astringent principle with a certain proportion of aroma or stimulant warmth.

Result of the foregoing inquiry.

It is at the same time clear, that a bitter and astringent principle are not the only, nor even the most effectual qualities for the cure of an intermittent; for the arsenical preparations contain neither of these in any prominent degree; while, as already observed, there are many medicines that possess them in far greater abundance than the bark, which have no claim to be put in competition with it as a febrifuge. In effect, of the three species of cinchona used officinally in the present day, the lance-leaved, pale or quilled bark (c. *lancifolia*), heart-leaved or yellow bark, (c. *cordifolia*), and oblong-leaved or red bark (c. *oblongifolia*), the yellow, which, as we learn from Mutis and Zea, is the genuine febrifuge of Spanish America, and whose superiority to the rest has been abundantly proved in this country as well as on the continent of Europe, is very considerably less bitter and astringent than the red, and not more so than the pale bark: it has less resin than the first, and less gum than the second. Dr. Cullen preferred the red, but Zea's communications upon the subject* were not then published; and he was not in possession of the experiments by which the statement of the latter has been confirmed. Sir George Baker, as already noticed, found

The most active febrifuges possess some property not yet ascertained.

* Annal. de Hist. Nat. tom. ii. Madrid, 1800.

GEN. II. Anetus. Medical treatment.

the red bark produce so much oppression and nausea that he was obliged to discontinue its use. It affords, however, the largest portion of quinine.

Ordinary administration of the bark.

In administering the bark, little needs to be added to the rules laid down by Sydenham, and copied in a preceding page. Dr. Home has sufficiently shown, not only that the best time for commencing the medicine is soon after the paroxysm, but that it should be discontinued some time before a recurrence of the cold fit, since, if persevered in till its accession, this fit is almost uniformly rendered more violent*.

If in the proportion of half a drachm or two scruples to a dose, as recommended by Dr. Sydenham, or such other quantity as may sit without uneasiness on the stomach, it should not succeed, it should be tried in combination with some aromatic, or omitted altogether; and by no means be increased to the enormous quantities some practitioners have ventured upon, who seem to have conceived that they could force the system to yield to its powers by the overbearing arms of weight and measure. It is singular that Borsieri should have so far lost sight of moderation, as to have prescribed occasionally from four to six drachms of the powder in a single draught. In the extremity of the yellow fever such doses have, indeed, been given, and perhaps with advantage, but opium and old port, in large abundance, have been given at the same time.

Where it should be abstained from.

It will also be judicious to abstain from the use of bark in every instance in which any of the abdominal viscera appear to be labouring under parabysmic enlargements, whether antecedently to its employment or during its use; and, in these cases, to alternate small doses of calomel, with whatever tonic may be found to agree best with the system. [Yet, as the editor has already stated, the experience of Dr. Elliotson proves, that the sulphate of quinine may be given beneficially whether such enlargements be present or not.]

Malaria of the Campagna.

Among the endemic intermittents of the present day, particularly worthy of notice, are those in the neighbourhood of Rome, and especially about the Pontine marshes,

* Clinical Experiments, 8vo. Edin. 1780.

which have often been drained to carry off the decomposing animal and vegetable materials that spread their *aria cattiva*, as it is called, over the whole of the Campagna. The disease hence produced is named, from its source, *malaria*. It is also found in like situations, and has the same name, about Syracuse, and other parts of Sicily. M. Rigaud de l'Isle has asserted, that the miasmic particles, which infect the air in these places, are heavier than the air in its loftier and lighter strata, and may be separated from it. He has found an elevation of 300 yards, at the Pontine marshes themselves, a complete security from infection; and he proposes for those who reside lower to sift the air which they breathe, by wearing a fine silk gauze over the mouth and nostrils*. M. Brocchi has successfully employed the same remedy, and hence recommends sleeping under a fine mosquito-net in all places where intermittents are endemic†.

GEN. II. Anetus. Medical treatment.

How guarded against.

* Mem. de l'Institut. Royale de France, March 24, 1817.

† Dello Stato fisico del suolo di Roma, &c. Di G. Brocchi.

# GENUS III.

## EPANETUS.

### *REMITTENT FEVER.*

SYMPTOMS STRIKINGLY EXACERBATING AND REMITTING; BUT WITHOUT INTERMISSION; ONE PAROXYS MEVERY TWENTY-FOUR HOURS.

GEN. III. THIS genus offers the three following species, which will be found sufficiently distinguished from each other by their specific characters:

1. EPANETUS MITIS. MILD REMITTENT.
2. ——— MALIGNUS. MALIGNANT REMITTENT.
3. ——— HECTICA. HECTIC FEVER.

Additional proof that marsh-miasm is not the only cause. Yet still the common cause. Human contagion sometimes a cause: and especially of hectic of the third species.

In the last, the remission is perhaps more perfect than in either of the others; and it serves to show how little foundation there is for referring all remittent as well as all intermittent fevers to the individual cause of marsh-miasm: for it would be difficult, though, perhaps, not impossible, to find a single example of a genuine hectic originating from this source. Marsh-miasm, however, is the most common cause of the second, perhaps of the first species; though we shall presently find it probable that even here, and particularly in the second species, human contagion has also occasionally proved a cause, as it assuredly has in those cases of hectic fever, produced by perpetually attending upon, or sleeping with, a consumptive patient.

## SPECIES I.

## EPANETUS MITIS.

### *MILD REMITTENT.*

PULSE REGULAR THOUGH FREQUENT; DEBILITY SLIGHT; REMISSION DISTINGUISHED BY SWEATING OR A CLOUD IN THE URINE.

Gen. III. Spec. I. Origin and scope.

This species occurs most frequently among persons of relaxed fibres, debilitated habits, and sedentary occupations; and is usually preceded by an irregular action of the alvine canal, flatulency, abdominal tension, dyspepsy, or some other affection of the viscera of the lower belly; and is hence called by Professor Frank, as well in the ensuing as in the present species, *gastric fever**, intermittent, remittent, or continued, according to the type it assumes. It occurs at all seasons of the year, but more frequently in the autumn; the ordinary temperament of the season uniting with the patient's infirm state of health, and thus adding an exciting to a predisponent cause. Fatigue, cold, or long exposure to the rays of the sun, are also, at this time, powerful concomitants, and quicken the appearance of the disease.

Gastric fever of Frank.

Diagnosis.

The patient complains of drowsiness, and feels languid; is occasionally chilly, and afterwards flushed, but without perspiration; for the skin is hot and dry, the thirst considerable, commonly with nausea and a total loss of appetite. In the course of the day, but usually towards the evening, the pulse quickens, the heat increases, and at length terminates in a sweat, which, however, is sometimes only partial, rarely free and copious, and never critical: for, on its ceasing, the skin is still dry and heated, and the pulse accelerated. Sometimes the exacerbation occurs about noon, and sometimes in the middle of the night.

Prognosis.

If the disease be left to itself, the symptoms augment

* De Cur. Morb. Hom. Epit. tom. i. § 50. 99. 8vo. Mannh. 1792.

GEN. III. SPEC. I. Epanetus mitis.

in severity daily; the head occasionally, but more generally the liver, or some other abdominal viscus, gives proof of being loaded and oppressed, and the restlessness is intolerable; or a sudden cholera supervenes, and carries off the complaint by a salutary crisis.

Medical treatment.

This species seems to be primarily dependent upon torpitude, or obstruction in some one or more of the chylopoetic organs, and generally yields to a course of active purgatives, amongst which calomel ought to take the lead. These should be repeated two or three times a week, and the intervals be filled up with mild diaphoretics. The pulse will generally be found from ninety to a hundred strokes in a minute; but, as soon as it sinks below this, and the heat and dryness of the skin have yielded to a general softness, columbo alone, or combined with sulphuric acid, will easily complete the cure; though the disease not unfrequently runs on for ten days or a fortnight.

Remittent fever of infancy.

The REMITTENT FEVER OF INFANCY, which is generally ascribed to worms, does not essentially differ from the present, regard being had to the greater irritability in early life. Worms, there can be no doubt, are sometimes the cause of this infantile fever, but perhaps rarely; and there is no instance on record of their having been traced in the bodies of those who have fallen victims to it. Dr. Hunter expressly declares, that he has often searched in vain. The ordinary cause is, crude accumulations in the first passages, whence the digestion proceeds imperfectly; there is great general irritation, with considerable languor; the belly becomes tumid and often full of pain; the food is nauseated; the head is hot, heavy, and often comatose; as though there were water in the ventricles, which is sometimes suspected, though without foundation; the skin is pale or livid, with occasional flushes in the cheeks. It is a singular fact, that if the exacerbation or increase of fever take place in the night, there is wakefulness and perpetual jactitation; if in the daytime, drowsiness and stupor.

Ordinary cause.

Symptoms.

Treatment.

Dr. Butter recommends, as an aperient, small doses of neutral salts, and, when the bowels have been opened, nitrate of potash; or, if there be considerable irritation, the extract of hemlock. Generally speaking, however, there is such a sluggishness in the peristaltic action of the bowels,

as well as in the intestinal secernents, that neutral salts will not answer the purpose; and, in consequence, rather add to the irritation, than carry it off. And hence, much stronger purgatives should be employed from the first; as calomel, resin of jalap, or gamboge dissolved in milk; and it may safely be prognosticated, that, till this plan is had recourse to, the disease will in most instances maintain its ground, if it do not make a fearful advance. But, with a course of brisk cathartics, in conjunction with perfect quiet, good ventilation, and light nutritive food, it will usually give way in a week or fortnight.

Gen. III. Spec. I. Epanetus mitis.

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## SPECIES II.

## EPANETUS MALIGNUS.

### *MALIGNANT REMITTENT.*

PULSE SMALL, HURRIED, IRREGULAR; DEBILITY EXTREME; OFTEN WITH SIGNS OF PUTRESCENCY.

Extreme debility may be inferred from the symptoms of great weakness and irregularity of the voluntary motions; weakness of sensation; weakness, and wandering of the mind; weakness of the pulse and of respiration; coldness and shrinking of the extremities; and a tendency to faint in an erect posture; nausea, vomiting, and a total disinclination to nourishment; difficult deglutition, depending upon an atony of the muscles of the fauces; involuntary excretions, depending upon an atony or paresis of the sphincters.

Gen. III. Spec. II. Extreme debility, how evidenced.

A putrescent state of the fluids may be determined from the following symptoms: pulse quick and tremulous; heat of the surface sharp and pungent, giving to the finger a peculiar tingling for some minutes afterward; the skin parched, or soaked with sordid, fetid sweat; the smell offensive to a considerable distance; the breath hot and fetid; the mouth aphthous; the tongue clammy, fetid, livid,

Putrescency of the fluids how evidenced.

GEN. III. SPEC. II. Epanetus malignus.

greenish-black; the lips swollen, puckered, cracked, and purple; the urine brown or blackish, and offensive; black discharge often in profuse quantity from the stomach; the stools blackish, colliquative, very offensive, parted with profusely and insensibly; the mind wandering; twitching of the tendons; swelling and tension of the belly; petechial spots, vibices, and hemorrhages from different parts, without proofs of increased impetus.

This species may be traced under four varieties, each sufficiently marked by its own symptoms:

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|---|---|
| α Autumnalis. | Autumnal Remittent. |
| β Flavus. | Yellow Fever. |
| γ Ardens. | Burning Remittent. |
| δ Asthenicus. | Asthenic Remittent. |

α E. malignus autumnalis.

The AUTUMNAL REMITTENT is that which so frequently shows itself in our own country, in the season from which it derives its name, with a strong tendency to assume the tertian or double tertian type: or, in other words, with striking exacerbations every other day, or where the double tertian is imitated, every day, the exacerbations commencing at noon, and the duration being usually under twelve hours; the intervals consisting of remissions, which, however, are not always very clearly determined. Where the double tertian type prevails, and the patient has to labour with two distinct sets of tertian exacerbations, it is obvious, that one of these must take place every day, as it must occur in the remission of the other. Consequently, this variety is often mistaken for a quotidian remittent. But a little attention will point out the real nature of the disease. For, while the one set will usually be found distinguished from the other by evincing some difference in its duration or its violence, both will be distinguished from the quotidian by the time of their attack, which is at noon, while the quotidian attacks in the morning; and by the comparative brevity of the paroxysm, which is always under twelve hours, while that of the quotidian runs on towards eighteen.

Sometimes mistaken for a quotidian remittent.

How distinguishable.

The perfect apyrexy, which takes place in the interval of intermittent fevers, gives the constitution a full power of recovering its energy and recruiting its sensorial supply;

and hence there is great difficulty in accounting for a return of the paroxysm: I mean in cases, in which the patient is removed from the miasmic atmosphere; for otherwise the cause that commenced the disease, will be present to continue it. Habit may possibly effect this after a recurrence of several paroxysms; but this will scarcely apply to the second, in which no habit can, with great strictness of language, be said to have taken place. In remittent fevers, however, something of this difficulty is removed; for the constitution, even during the remissive interval, is still struggling with disease, and has not an opportunity of recovering its sensorial power.

GEN. III. SPEC. II. α E. malignus autumnalis.

Return of the paroxysm difficult to be accounted for in remittents.

But less so in intermittents.

There is no perplexity in accounting for a greater tendency to febrile affections in the autumn, than in any other quarter of the year: and this, whether we allow the operation of a specific febrile miasm from marshes or not. When the animal frame has for some months been exposed to the stimulus of a high atmospheric temperature, and not unfrequently, perhaps, to that of the direct rays of the sun, all its organs become relaxed and debilitated. The nervous energy is diminished; or, in the language of Dr. Cullen, is in a state of collapse; a general languor and inertness prevail over every part of the system, and most of the functions are performed feebly and laboriously. And hence, if debility be the first stage of the proximate cause of fever, this part of the cause is continually present. But this is not all; the calorific rays of the sun act more powerfully upon some organs than upon others; and most of all upon the liver. The liver is hence in a state of perpetual irritation: an unusual proportion of bile is secerned, a part of which is very generally resorbed and carried into the circulation; and, in tropical climates, so large a part as to form one of the causes of that tawny hue, by which the skin is there characterized. And as the greater proportion of the surplus often passes off by the bowels, we see an obvious foundation laid for that variety of diarrhœa, which we have already described under the epithet of *bilious*. The liver, moreover, becomes weakened and torpid in proportion to its degree of excitement; and, hence, more disposed to congestion; and where congestion or any other obstruction takes place in a large organ, there is instantly a disturbance in the balance of the circulating fluid; and a disturb-

Fevers, why more frequent in the autumn.

The organs relaxed and weakened generally by the heat of the season; the liver particularly;

whence congestions and a disturbance of the circulating balance;

GEN. III. SPEC. II. α E. malignus autumnalis.

ance which, in so irritable a state of the general system as we are now contemplating, can rarely exist without fever, or a tendency to fever.

and occasionally gastric or enteric inflammation.

There is no question, that this general disturbance of the balance of the circulating fluid and increased excitement of the digestive organs may terminate in actual inflammation in some part of these organs, and especially in their mucous membrane *; and hence, those pathologists, who regard fevers of all kinds as consisting in inflammation, contemplate the remittent before us as an enteric, or gastric phlegmasia: but this, as we have already had occasion to observe, is rather to denominate it from its result, than from its essential nature, and to make the cause and effect change places: a remark, which will apply to yellow fever, as well as to the present variety.

The frame weakened often by the vicissitudes of the season.

All this mischief is apt to occur in autumns of temperate climates, that are peculiarly dry and uniform in the range of the thermometer. But, it often happens, that even in the most temperate and healthy climates, like our own, the autumnal months are chequered with sudden vicissitudes of heat and cold: and the pools and rivers are suddenly inundated with equinoxial rains, overflow their banks, and cover a wide surface of land with stagnant water. And the animal frame has, hence, to contend against the dangers of invisible damps, and abrupt changes of temperature, as well as against solar excitement: all which become occasional causes of fever, operating upon a state of body already predisposed to its influence.

Marshmiasm often the remote cause.

And, hence, even without the existence of febrile marshmiasm, we see sufficient causes for a more frequent appearance of fever in the autumn, than in any other season of the year: whence, indeed, one reason for its appearing in warm seasons in fleets that are cruising at a considerable distance from ports, as has been justly observed by Dr. Burnett †. But in many districts, perhaps even in some sporadic cases, we have reason to believe, that marsh-

* The frequency of increased vascularity and ulceration of the mucous coat of the intestines in fever, has been amply proved by dissection. See particularly Broussai's Phlegm. Chroniques; Andral's Clinique Medicale, tom. i.: and Bright's Reports of Med. Cases; p. 178 et seq. 4to. Lond. 1827. Ed.

† On the Bilious Remittent of the Mediterranean.

miasm does co-operate, and itself form the remote cause; and more especially where such cases are frequent, the residence a low-land, and the season hot and rainy. Dr. James Johnson makes a like distinction between the causes of the ordinary endemic fevers of the East. "The fever in question," says he (bilious remittent), "frequently arises from atmospheric heat, or rather atmospheric vicissitudes, deranging the functions or even structure of important organs; and is, as Sir James M'Grigor supposes, sympathetic of local affection. Where marsh-miasm is added, which is generally the case, then we have the endemic of the place, modified by the peculiar nature of the effluvia, and from which we are not secured, but by local habituation to the cause*."

GEN. III. SPEC. II. α E. malignus autumnalis.

In the East as well as in Europe.

In consequence, the symptoms have often a close resemblance in both cases, so much so indeed, that when both diseases co-exist, it is sometimes found difficult to distinguish them. "The occurrences," says Dr. O'Halloran, "which preceded the appearance of the epidemic of Barcelona in 1821, correspond with the old and recent observations on a similar subject in other countries; it almost invariably happening, that the YELLOW FEVER of Spain is preceded by unusual diseases of various form and force; more particularly by BILIOUS REMITTENTS, which are not unfrequently so aggravated and MALIGNANT, that physicians themselves do not venture to define the lines of demarcation between them and the avowed epidemic†."

Difficulties in explaining the nature of remittents, yet not greater than in other parts of physical study.

There is still, however, a difficulty in determining why the type of any fever, hereby produced, should be remittent rather than intermittent or continued; and why its declinations should imitate one form of intermittents rather than another. Pathology has its mysteries as well as every other branch of science; and let the man who would accuse us of ignorance, because we are incapable of explaining these secrets of nature, first tell us, to adopt the language of Sydenham, "why a horse reaches his full growth at seven years old, and a man at twenty-one? or, why some plants flower in May, and others in June? If," continues

Remark of Sydenham.

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* Influence of Tropical Climates, &c. 3d edit. p. 105.

† Remarks on the Yellow Fever of the South and East Coasts of Spain, &c. 8vo. 1823.

GEN. III. SPEC. II. α E. malignus autumnalis.

he, "the most learned men are not ashamed to make an open avowal of their ignorance upon these points, I cannot acknowledge myself blameable if I modestly forbear reasoning upon a subject quite as difficult, and perhaps altogether inexplicable. At the same time I am persuaded, that the progress of nature is as certain and regular in these cases as in any others, and that the quartan and tertian intermittents are as subject to the natural laws, and as much governed by them, as any other occurrences whatever."

Diagnostics.

The autumnal remittent commences with lassitude, a general soreness over the body, yawning, inquietude, and most of the other concomitants of a febrile incursion. As some of the larger organs have been more affected by the influence of the season than the rest, we find them giving way in proportion. Hence, the head is sometimes severely tried with pain or heaviness; the bowels are overloaded with bile, or the stomach is exquisitely irritable, and rejects whatever is introduced into it. Generally speaking, the stomach, from this symptom, suffers more than any other organ; and, along with the sickness, we have often a very troublesome and debilitating looseness, which resists every attempt to check its course. Sometimes, however, the bowels are costive from torpor, and the stomach is but little affected.

Violence of incursion and duration of the fever not necessarily in proportion.

The violence of the symptoms are commonly in proportion to the violence of the incursion; but not the duration of the disease: for I have often seen a fever, that commenced mildly and insidiously, hold on for upwards of three weeks; whilst another, that commenced with great severity and threatened the utmost danger, has softened its aspect in a week, and entirely quitted the patient in a fortnight. The exacerbation ordinarily takes place at noon, or early in the afternoon, and consists in an increase of heat and pulsation, for there is rarely any preceding chill, and as rarely any salutary moisture when the heat diminishes. The early part of the night is hence peculiarly restless, and no part of it tranquil: the patient dozes perhaps for a few minutes, but without being sensible of sleep, and talks incoherently while dozing; the images before him being partly furnished from dreaming and partly from delirium. And even during these snatches

of unquiet slumber, he is perpetually turning from side to side in quest of ease, which no position affords him. Every symptom is obstinate; laudanum rarely produces sleep, and no sudorific, perspiration: the coolest and most refreshing drink is rejected from the stomach; and if looseness teaze the bowels, it is retained, as already observed, with great difficulty. It is hence of little importance what nourishment is offered, and every preparation seems almost equally to fail in supporting the strength of the system. In effect, the debility increases with every fresh exacerbation; and if no favourable change take place before the fourteenth or fifteenth day, there will always be reason for alarm. The progress of this disease is admirably described by Professor Frank, under the name of febris continua gastrica*, the remittent form being with him, as with Dr. Cullen, a section of the continued fever.

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Continued gastric fever of Frank.

In the case of a young lady in her seventeenth year, whom I lately attended, the attack was slight, and no serious evil was at first apprehended. The pulse was about ninety in a minute, and rather small; the bowels were relaxed, the motions bilious, and the stomach suffered from nausea. A gentle emetic seemed to afford some relief to the stomach, and a dose of rhubarb and calomel to the bowels; but the fever continued with a daily and increasing exacerbation, for the most part at mid-day or soon after. The stomach again became irritable and sick, and the sickness was again connected with a diarrhœa, but the stools were colourless and watery, and nothing was rejected from the stomach but the diluent food that was swallowed. The skin was now very hot and dry, the pulse from a hundred to a hundred and twenty strokes in a minute, the nights were passed in perpetual jactitation, or in short and talkative dozings. Opium, rhubarb, neutral salts, diaphoretics, and mild astringents, in almost every form and combination, were tried with very doubtful advantage, and the first with evident mischief. Anodyne injections were of as little avail; but sponging the limbs with cold water, or brandy and water, which was employed as well during the remissive as the aggravated symptoms,

Illustrated by a case of great severity.

* De Cur. Morb. Hom. Epit. tom. i. § 100. 8vo. Mannh. 1792.

GEN. III. SPEC. II. α E. malignus autumnalis.

diminished the pungent heat, and for a time afforded some refreshment. Still the fever continued its career; the stomach retained nourishment with difficulty, the bowels were daily teazed with six or seven watery evacuations; the pulse was quicker and weaker, and the nights without rest. The heart at length became oppressed with a sense of fulness rather than of throbbing; the lips were considerably swollen, ragged and black; a hemorrhage occasionally issued from the nostrils and the fauces; and the general debility was greatly augmented. Such was the appearance towards the eleventh day. The tongue was not much furred, the pulse, though small, and rarely under a hundred and twelve, was steady: but the heat was intense, and the thirst unquenchable. The mineral acids in dilution, sometimes singly, and sometimes in the combined form of aqua regia, with acidulated beverages, were now chiefly trusted to, in connexion with farinaceous foods, jellies, and beef tea; and cold water was permitted in any quantity. This plan was continued till about the eighteenth day; when every thing allowed being rejected, and every evacuation accompanied with faintness, it appeared to me that the plan should be changed; that the chief cause of irritation was at this time debility; and that a more stimulant treatment should immediately be commenced. My colleagues, for whom I have a high respect, acceded with reluctance, as conceiving, that we should only exasperate the febrile symptoms; and that if the stomach could not retain tasteless things, it would instantly reject wine or convert it into an acid. The attempt, however, was made; sound old Madeira was administered by tea-spoonfuls, and shortly afterwards a small portion of chicken-jelly. Both remained on the stomach; but the diarrhœa continued; and for this, as modern preparations had proved of little use, I recommended a scruple of the confectio Damocratis in half an ounce of cinnamon water after every loose motion. The diarrhœa ceased as by a charm; the ensuing exacerbation was less marked, the night was passed more tranquilly, and columbo, in small doses of the powder, was commenced the next morning, and persevered in. The change of treatment, being thus found to succeed, was adhered to, and the patient slowly, but effectually recovered.

It is not often that the autumnal remittent is thus obstinate. But whether there be sickness or not, an emetic should be administered, as one of the best means of determining towards the skin. And singular as the advice may appear, it is rather to be recommended where there is little or no sickness, than where the sickness is incessant; for, in this last case, the stomach is often so extremely irritable, that emetics only exasperate it and add to the distress. It will also be useful to evacuate the bowels on all occasions, though the emetic alone will frequently be sufficient for this purpose: and hence Stoll allows of nothing beyond: for purging, says he, augments the fever, while an emetic strangles it as at a blow *.

General treatment.

Emetics, when little or no sickness.

Aperients, whether useful or not.

The use of the lancet must depend upon the circumstances of the particular case. Where the onset is violent, and particularly where the patient is plethoric or of a vigorous habit, it should be employed instantly and freely; for, without it, from the urgency of the symptoms, there can be little doubt, that some large organ or other will soon become locally affected with effusion or congestion, which is always to be avoided as one of the worst symptoms that can occur. And if we have reason to believe, that such local affection exists at the time of the attack, and, more especially, that it is the cause of it, copious depletion will be still more necessary; for, in this case, we have not only to contend with the fever, but to guard against phlogosis or inflammation in the infarcted organ.

Venesection, when useful.

But, except in such cases, there is no call for the lancet, and we may concede to Stoll that its use is injurious. [According to the observations of Dr. Bright, a tongue with red edges, more particularly when dry, almost universally indicates in fever great irritation of the mucous membrane of the intestines; and, when combined with loose, yellow, gritty dejections, generally denotes ulceration, or a state approaching to it. In this state leeches and blisters may be applied to the abdomen; and the medicine, in which Dr. Bright seems to put most faith, consists of small doses of ipecacuanha, the hydrargyrus cum creta, and pulv. cretæ comp., generally in the proportion of a grain of the first, three of the second, and ten of the last

When injurious.

Treatment, when ulceration of the mucous membrane of the intestines is suspected.

* Rat. Med. Part I. p. 227.

GEN. III. SPEC. II. α E. malignus autumnalis.

article. The oleum ricini, with a few drops of tinct. opii, he prefers as the safest aperient. Two grains of hydrarg. c̄ creta, and ten of confect. opii, made into pills, and to be taken thrice a day, are also sometimes prescribed, with mucilaginous saline medicines and ten or fifteen drops of vinum ipecac. to each dose*.] Copious diluents, and small doses of antimonial powder in effervescing neutral draughts, will ordinarily take off the burning heat of the skin by exciting a breathing moisture; and if this can be maintained through the day, the ensuing exacerbation will probably be mitigated in its violence. If not, eight or ten drops of the tincture of digitalis should be added to the antimonial draught, and all tendency to sickness be restrained by a few drops of laudanum: keeping the bowels in the mean time open with some gentle laxative, as rhubarb, and the sulphate or supersulphate of potash in combination.

Other remedies.

Blisters rarely serviceable.

Blisters are never of service, except when topically called for, or as stimulants in the last stage of debility. If the diaphoretic plan fail of effect, and the heat be pungent and augmentive, acids, vegetable, mineral, or both, will ordinarily constitute the best sedatives and refrigerants: and, where the debility is extreme, the stimulant plan should be had recourse to, which is laid down in the preceding case.

Acids.

β E. malignus flavus.

One of the severest and most fatal forms, under which the malignant remittent shows itself, is that of the YELLOW FEVER, constituting the SECOND VARIETY of the present species; so denominated from the lemon or orange hue, which is thrown over the entire surface of the body, almost from the first attack of the disease, and which gives it a distinctive feature. The heat is here also intense, the thirst extreme, and the vomiting strikingly obstinate; but not, as in the preceding species, consisting of a colourless material, or the food that has been swallowed, but of a yellowish matter at the beginning and through the height of the fever, and of a chocolate-coloured colluvies towards its close.

Distinctive features.

Common remote cause, marsh-miasm.

The common remote cause of this fever is unquestionably marsh-miasm: and hence it holds a stationary abode in the swampy soils and morasses of the intertropical re-

* See Bright's Reports of Medical Cases, p. 178, &c. 4to. Lond. 1827.

gions, exposed to a high solar heat, and perpetually exhaling a decomposition of animal and vegetable materials; and is found occasionally in all climates that make an approach to the same character: where, in the correct picture of the poet,

GEN. III. SPEC. II. β E. malignus flavus.

> The rivers die into offensive pools,
> And, charged with putrid verdure, breathe a gross
> And mortal nuisance into all the air.

Yellow fever in its malignant form of recent origin.

It is nevertheless a striking fact, that, although such "mortal nuisances" have been exhaled into the atmosphere in all ages within the range of the tropics, the fever we are now entering upon is only of modern date in its malignant form. Whether this be owing to any degree of general change that has taken place in the human constitution, or to a larger accumulation of that mixed animal and vegetable compost which forms the hot-bed of the present destructive miasm, or to any other cause, it is difficult to determine. It certainly seems, as Sir Gilbert Blane has observed, to have some bearing upon the slave-trade, with which it is precisely coetaneous. Small-pox, syphilis, and rickets, were equally unknown to the ancients; yet the causes of their origin, as indeed those of all other epidemic or constitutional diseases, are involved in inscrutable darkness; and, in the language of the poet,

> —Noctescunt tenebris caliginis atræ.

History of its rise and range; visits America;

The yellow fever first showed itself, so far as we have any record of its origin, at Barbadoes in 1647, whence it spread to various other West Indian Islands, and at length made its appearance at Boston, in North America, in 1693, to which place it was carried from Martinique by the fleet under Admiral Wheeler. In Europe, its earliest footsteps were traced at Lisbon in 1723 *, after this period it seems to have declined as well in its violence as in its visits to the same regions, particularly in respect to North America and Europe. But, in 1793, a new era of its prevalence commenced; the disease showing itself then and down to

* Sir Gilbert Blane, Select Dissertations, &c. p. 284. Lond. 8vo. 1822.

GEN. III. SPEC. II. β E. malignus flavus.

the present day with a frequency and fatality it had never evinced before, especially in the West Indies and North America. This aggravated form, however, did not manifest itself in Europe till the year 1800, when, after an interval of six and thirty years, it appeared at Cadiz in all its horrors. Since this period it has visited Cadiz four times; and has hence spread to neighbouring sea-port towns in the South of Spain, at short intervals. Among other places in this line of coast, it has several times visited Gibraltar; first in 1804, when more than one-third of the garrison and population were carried off; and occasionally since, but with little comparative loss, on account of those precautionary means, which had been entirely neglected on the first visitation.

visits Europe;

visits Europe afresh.

Atmosphere of its miasm.

To what extent the miasm of yellow fever, as it arises from its swampy and putrescent base, may spread before it becomes dissolved and decomposed in the surrounding atmosphere, it is not easy to determine. "It is probable, however, that where a trade-wind or monsoon sets over a large tract fraught with febrific miasmata, these invisible agents may be carried to a much greater extent, than where calms or gentle sea and land breezes prevail. This is exemplified in the fever of Corimbatore, and ought ever to be borne in mind by navigators in anchoring ships in the vicinity of swamps, or generals in pitching tents or stationing troops *."

Like the miasm of human effluvium, less volatile than the miasm of the ordinary bilious remittent.

It is also satisfactorily proved, that the modification of miasm, producing yellow fever, does not spread so far, or rise so high, and, consequently, is not so volatile, as that producing the ordinary bilious remittent of hot climates; a feature, by which it makes a nearer approach to the miasm of human effluvium, and shows that affinity to it, even from the first, which we have endeavoured to establish in the introductory remarks to the present order. Dr. Ferguson has given us a striking illustration of the truth of this remark, as also of the relative barometrical elevations of the respective regions of yellow fever, ordinary bilious remittent, and a pure and healthy atmosphere, in the following passage, in which he is taking a medical

Illustrated from Ferguson.

* Influence of Tropical Climates, &c. by J. Johnson, M.D. 3d Ed. p. 148.

periscope of the island of Antigua. "The autumn of 1816, became very sickly, and YELLOW FEVER broke out in all its low marshy quarters, while the MILDER REMITTENT pervaded the island generally. It was the office of the white troops to take the guards and duties of the dock-yards amongst the marshes below; and so pestiferous was their atmosphere, that it often occurred to a *well seasoned soldier* mounting the night-guard in perfect health, to be seized with furious delirium while standing sentry, and when carried to his barracks on Monk's Hill, to expire, in all the horrors of the black vomit, within less than thirty hours from the first attack; but, during all this, not a single case of yellow fever, nor fever of any kind, occurred to the inhabitants of Monk's Hill (a rock rising perpendicularly above the marshes to the height of six hundred feet). The result on the Ridge (a hill about a hundred feet lower) was not quite the same, but it was equally curious and instructive. The artillery soldiers, seventeen in number, never took any of the night guards, but they occupied a barrack about three hundred feet above the marshes, not perpendicularly above them, like Monk's Hill, but a little retired. Not a case of yellow fever or black vomit occurred amongst them; but every man, without a single exception, suffered an attack of the ordinary remittent, of which one of them died: and at the barrack on the top of the Ridge, at the height of five hundred feet, and still further retired from the marshes, there scarcely occurred any fever worthy of notice*."

Gen. III. Spec. II. β E. malignus flavus.

There is another feature, in which the miasm of the yellow fever shows its affinity to the febrile contagion of the human frame, and evinces its less diffusibility; and that is, in readily attaching itself to whatever bodies it meets with, though to some more than others. Even the leaves and branches of trees form powerful points of attraction, and, where they are in the immediate vicinity of a swamp, retain the contagious matter that rests upon them so effectually, as, in many cases, to keep the surrounding atmosphere free from pollution, and become a safe-guard against febrile attack. "The town of New Amsterdam, in Berbice," says

Like the same equally attaches itself to neighbouring substances. Illustrated.

* On the Nature and History of Marsh Poison, Medico-Chirurg. Rev., Dec., 1821; and compare with Chisholm, on Tropical Climate, p. 34.

GEN. III. SPEC. II. β E. malignus flavus.

the same writer, "is situated within a short musket-shot to leeward of a most offensive swamp, in the direct tract of a strong trade-wind that blows night and day, and pollutes even the sleeping apartments of the inhabitants, with the stench of the marshes; yet it brings no fevers, though every one is well aware that it would be almost certain death for an European to sleep, or even to remain after night-fall, under the shade of the lofty trees that cover the marsh at so short a distance. All, too, are equally aware, that to cut down the trees would be a most dangerous operation in itself, and would certainly be productive of pestilence to the town*."

Known under various names.

As almost every territory in which the fever, hereby produced, has committed its ravages has given it a new name, it is as gorgeously arrayed with titles as the mightiest monarch of the east. From the depredations it has committed in the West Indies and on the American coast, it has been called the St. Domingo, Barbadoes, Jamaica, and American fever: and from its fatal visitations on the Guinea coast and its adjoining islands, the Bulam fever. In British India, it is distinguished by the name of the jungle-fever, the hoogly-fever, or endemic of Bengal; and still further to the east by that of mal de Siam. Nearer home, in the lowlands of Hungary, and along the South of Spain, it is called the Hungarian or the Andalusian pestilence. From its rapid attack on ships' crews that are fresh to its influence, the French denominate it *fièvre matellotte*, as the Spanish and Portuguese call it *fiebre amarilla*, and still more frequently *vomito prieto*, or black vomit, from the slaty or purplish and granular saburra thrown up from the stomach in the last stage of the disease; while, as its ordinary source is marsh lands, it has frequently been named *paludal fever*. Its more common name, however, in the present day, and, for the reason already assigned, is yellow fever: and, when the attack upon new comers is slight, *seasoning*. It is the *febris gastrico-nervosa* of Professor Frank†, who justly regards it as an intense variety

Febris gastrico-nervosa of Frank.

* On the Nature and History of Marsh Poison, Medico-Chirurg. Rev., Dec., 1821; and compare with Chisholm on Tropical Climates, p. 34.

† De Cur. Morb. Hom. Epit. tom. i. § 103. 8vo. Mannh. 1792.

of the ordinary autumnal malignant of temperate climates, as already described under this name. GEN. III. SPEC. II. β E. malignus flavus.

From its showing itself in so many parts of the world, and under circumstances so widely different, it is not to be wondered at, that it should often be accompanied with a considerable diversity of symptoms; and, consequently, that the paludal fever of one quarter should be regarded by many writers of considerable authority as essentially different from that of another. But an attentive perusal of the origin and laws of febrile miasm, as I have endeavoured to explain them, when treating of the remote cause of fever, will, I trust, be sufficient to account for all such local distinctions; and, if not to prove, at least to render it highly probable, that they depend "partly upon the state of the body at the time of attack, but chiefly upon some modification in the powers or qualities of the febrile miasm itself, by the varying proportions of the co-operative agents of moisture, heat, stagnant air, and other auxiliaries which have not yet been detected, in their relation to each other in different places and seasons." Exhibits great diversity of symptoms. Accounted for.

How far the yellow fever is capable of *origination* from any other cause than febrile miasm from marshy lands, or places subject to like decompositions and plays of chemical affinity, we cannot at present determine. Such places, however, are numerous, as damp unventilated stations, stagnant water, thick impervious jungles, and woods that arrest the miasm as it ascends; even high and arid hills after heat and rain, but, above all, a foul state of the hold on board ships, whatever be the cause of such impurity. "Ships," observes Dr. Chisholm, "containing wine in their holds in a state of decomposition, are generally extremely sickly, and the character of the prevalent disease is that of YELLOW REMITTENT FEVER. Several instances of this took place in Fort Royal Bay in the years 1797, 1798; and the situation of the ships in the open bay, far from the influence of marsh effluvia, precluded a suspicion of the fever from that cause.—The ship Nancy, Captain Needs, from Fyal, with a cargo of wine for the army, arrived at Fort Royal, Martinico, in the month of October, 1798: she met with a gale of wind at sea on the 17th September, and several of the casks, from the motion of the ship, became leaky. The captain was taken sick at Whether capable of originating from other causes than marsh-miasm. Such causes enumerated.

GEN. III. SPEC. II. β E. malignus flavus.

sea, and died with every symptom of the highest grade of yellow remittent fever. The mate and several of the crew were attacked with the same complaint: they recovered: but a mate, shipped at Fort Royal, fell ill on board and died. The ship lay out in the open bay; no vessel near her was sickly; and she herself became very healthy after the cargo was landed*."

Heat alone not a cause.

Heat alone, however high the temperature, is not a cause of the fever before us: there must be moisture; and as the result of both a rapid decomposition and exhalation of organic remains. Provided the air is dry, even tropical climates are often found salubrious. "The burning province of Cumana," observes M. Humboldt, "the coast of Cora, and the plains of Caraccas, prove, that excessive heat alone is not unfavourable to human life."

But heat, even on high grounds may become a powerful auxiliary, other causes being present.

It has just been observed, however, that even high and arid situations, after heat and rain, may also furnish, by the chemical decomposition of their soil, the specific miasm of yellow fever: and it may here be added, that if, by the violence and redundancy of the rain, the swampy low grounds be at the same time overflowed, the latter will become an arena of health, while the heights are the seat of disease. Such the hilly ravines of Portugal were occasionally found by the British army, during its occupation of that country in the summer of 1809, when a most destructive remittent suddenly made its appearance, while the overflowed swamps at its feet were more than usually free from disease: "and such is frequently the case," as Mr. Irvine has justly observed, "on the lofty ridges of Sicily, when their fiumari or water-courses, which are ordinarily dry and used for roads in the summer months, are filled and inundated with sudden torrents of rain. For here the malaria changes its station, and quits the overflowed low-lands for the heights of the primitive hills."

But, whatever be the original source of the fever before us, when once it has established itself and rages with severity, it is now very generally admitted that the effluvium from the body of the affected "is loaded with miasm of the same kind, completely elaborated as it passes off,"—and

* Essay on the Malignant Pestilential Fever, vol. I. p. 279. See also Dr. Dickson's Topographical Remarks, &c. sect. iii.

that the disorder is from this time capable of communicating itself by contagion. And, from the statement already given, it appears far more probable, that the fever at Cadiz in 1800, that at Malaga in 1803, and that at both in 1820, had their *origin* in contagion, or, in other words, in febrile miasm, produced by a decomposition of the effluvium from the human body, than from the same miasm issuing from a decomposition of marsh-lands. And, on this account, I have rather preferred the trivial name of *yellow* to that of *paludal* fever, which is too limited to express its source in every instance. The yellow fever at Xeres is ascribed by Don J. A. Ferrari entirely to this cause, as produced by importation; but its primary source he attributes to the decomposition of swampy lands, or other sources of putrefaction, which he seems to suppose may exist even in some parts of Spain*.

Gen. III. Spec. II. β E. malignus flavus. Secondarily produced and communicable by contagion. Sometimes perhaps primarily thus produced.

In all instances it has a near approach to the autumnal remittent we have just described; Dr. Rush contemplates them as merely different degrees of the same disorder; but Dr. Bancroft is, as it appears to me, more correct in considering them, after Professor Frank, as "varieties of one disease†," in unison with the present arrangement.

It should be observed, however, that for the yellow fever to become contagious, it seems necessary, that the thermometer should be above 80° of Fahrenheit: since, like the plague, it demands for the activity of its miasmic corpuscles a certain range of temperature, below which it ceases to operate, and its specific particles perhaps generally become decomposed. It has never been known in North America, nor in the South of Europe but at the season of the year in which tropical heats, that is, those of 80° or upwards, prevail; and it has never failed to disappear in winter, even in the mild winter of Spain: though typhus may at the same time hold its full career of malignity‡.

A certain height of temperature necessary for it to become contagious.

From the different impressions, produced on febrile miasm under these diversities of origin and adjuncts, we find, independently of other discrepancies, that the fever it

Remittent fever from incidents evinces

* Edin. Med. and Surg. Journ. July, 1823. p. 369.

† Essay on the Disease called Yellow Fever, &c. 1811.

‡ Blane, Select Dissertations, &c. p. 314.

GEN. III. SPEC. II. β E. malignus flavus.

excites sometimes assumes a caumatic or inflammatory cast, sometimes a typhous, and sometimes a synochous, or, in other words, begins with the first and runs rapidly into the second or third. And it is in effect into these three subsections, that the Andalusian yellow fever has been lately restored by Dr. Jackson in his excellent work on the subject. Generally speaking, the variety before us evinces the last of these characters, as does also the variety we have just treated of: the two varieties that yet remain will afford examples of a typhous and inflammatory bearing.

different forms.

Yellow fever generally the synochous.

Ordinary progress.

Its ordinary progress amongst those, who are fresh to the tainted atmosphere, is thus accurately described by Dr. Mosely, who, from its resemblance to the causus of Hippocrates, denominates it *endemial causus:* a term which has since been adopted by Dr. M'Arthur*, and several others. "When a new-comer is seized with a sudden loss of strength, and a desire of changing, for rest, into every position without finding it in any, those symptoms which constitute the *endemial causus* may be expected. The following day, but sometimes within twelve hours from the first indisposition, the violence of the disease will commence thus: There will be a faintness and generally a giddiness of the head, with a small degree of chilliness and horror, but never a rigor. Then immediately will succeed a high degree of fever with great heat, and strong beating in all the arteries of the body, particularly observable in the carotid and temporal arteries; flushings in the face; gaspings for cool air, white tongue, but tinged with yellow, after the retchings have commenced; excessive thirst, redness, heaviness, and burning in the eyes; heaviness and darting pains in the head, and small of the back, and often down the thighs; pulse quick, generally full and strong, in some cases quick, low, and vacillating; skin hot and dry; sometimes with a partial and momentary moisture; sickness of the stomach from the first, which increases with the disease; and, immediately after any thing is taken to quench the thirst, retchings succeed, in which bilious matter is brought up; anxiety with stricture, soreness, and intense heat about the præcordia; great restlessness; heavy respiration, sighing; urine deep-coloured, and but little in

First stage.

* Account of the Causus or Yellow Fever of the West Indies, &c.

quantity. This is the first stage of the fever; and may continue twenty-four, thirty-six, forty-eight, or sixty hours, and this constitutes its inflammatory period. Gen. III. Spec. II. β E. malignus flavus.

"The second stage begins with an abatement of many of the preceding symptoms, and the rise of others: sometimes with a deceiving tranquillity, but with perturbation if the patient should fall into a sleep: then a yellow tinge is observed in the eyes, neck, and breast; the heat subsides, and sometimes with a chilliness; but not with that sort of strong rigor, which, when it happens, terminates the disease by sweat, or by copious bilious evacuations upwards or downwards. The retchings are violent, and turn porraceous; the pulse flags, but is sometimes high and sometimes soft; the skin soft and clammy; the urine in small quantity, and of a dark croceous colour; the tongue in some cases is dry, harsh, and discoloured; in others furred and moist; there is confusion in the head, and sometimes delirium; with the eyes glassy. This stage of the disease sometimes continues only for a few hours, sometimes for twelve, twenty-four, thirty-six, or forty-eight hours, but never longer. Second stage.

"In the third and last stage of the fever, the pulse sinks and becomes unequal and intermittent, sometimes very quick; frequent vomiting with great straining and noise in vomiting, and what is brought up now is more in quantity, and has the appearance of the grounds of coffee, or is of a slate colour. Nothing can be retained in the stomach; difficult breathing; tongue black; cold clammy sweats; eyes hollow and sunk; yellowness round the mouth and temples, and soon after over the whole body." Third stage.

In the earlier remissions, the pulse often sinks from a hundred and thirty to ninety, and the general improvement is so considerable as to impress the young practitioner with the belief of a salutary crisis. He is soon, however, aroused from his deception, for the exacerbation soon returns with renewed violence; and as the symptoms grow more aggravated, they are in the end accompanied with subsultus tendinum, black urine, deadly coldness of the limbs; delirium, faltering speech; hemorrhage, or oozing of blood from the mouth and nostrils, corners of the eyes and ears; black bloody vomiting and stools; vibices, hiccough, muttering, coma, death. Closing scene.

GEN. III. SPEC. II. β E. malignus flavus.

After the first prostration of strength, produced by the symptoms of invasion or accession, the *prodromes* of M. Deveze, the disease runs on violently through its stage of excitement till the sensorial power is exhausted. Through its entire course, till the patient is sinking, the intellect is not particularly disturbed, and the organs chiefly affected are the abdominal; those which principally suffer in the malignant autumnal remittent of our own country; more especially the stomach and the liver. Hence, the intense heat and anxiety about the præcordia, the saffron dye of the urine, the yellow tint of the skin, and the vomitings, first of a bilious, and afterwards of a chocolate or sanguineous colluvies. In the Andalusian variety, however, according to Dr. Jackson, the brain is sometimes the first organ affected, and the abdominal organs consecutively *.

General remarks.

Rapid rush to the second and third stages in some cases.

In some cases, the disease opens with great vehemence, and rushes forward at once to its acme, constituting the second stage of Dr. Mosely. The patient is sometimes cut off in four-and-twenty hours: and from the violence so suddenly committed on the liver, its proper function is instantaneously suspended, and, instead of an excessive emulgence of high-tinted bile, a chlorotic secretion takes place, which, forced into the sanguineous system, gives a ghastly lividity to the entire surface. Shortly after which, if the patient live long enough, the gorged blood-vessels of the inflamed and gangrenous liver itself, and sometimes also of the spleen or stomach †, give way, and repeated tides of dark granulated grume, like the grounds of chocolate, are ejected by the mouth.

Black vomit.

Description of the disease in its rapid march; by Pym, called Bulam fever.

Dr. Pym has very forcibly described this overwhelming onset of the disease in the following terms: "There is *at the first attack* a peculiar shining or drunken appearance in the eyes; the head-ache is excruciating and confined to the orbits and the forehead; has no remissions; when it terminates favourably, is rarely attended with yellowness of the skin, which, if it do take place, is of a very pale lemon

* Remarks on the Epidemic Yellow Fever, &c. on the south coast of Spain, 8vo. Lond. 1821.

† Chisholm, Manual of the Climate and Diseases of Tropical Countries, &c. p. 36.

colour. It runs its course from one to five days, is attended with a peculiar inflammation of the stomach, which, in most cases that prove fatal, terminates in gangrene, or in a diseased state of the internal or villous coat of that organ, accompanied with a vomiting of matter resembling coffee-grounds, and a livid or putrid appearance of the countenance, which it is impossible to describe; but those, wishing to form an idea of it, may see its fac-simile in the countenance of any person with a florid complexion, during the burning of spirit of wine and salt in a dark room, as is practised in the game of snap-dragon during the Christmas gambols *."

GEN. III. SPEC. II. β E. malignus flavus.

In this state, the disease is unquestionably for the most part, though not always, contagious: and as Dr. Cullen has laid down contagion as a distinctive character of fevers originating from human effluvium, in contrast with those originating from the effluvium of marshes, Dr. Pym has endeavoured to draw a line of distinction between yellow fever in this state of intensity and in its ordinary career; contending that the former (to which he limits the name of Bulam fever) is in every instance derived from human effluvium, and, consequently, that the two must of necessity be distinct diseases. And to make the distinction still clearer, he has ventured to assert, that the symptom of a more pallid or bloated countenance, together with that of black vomit, or the discharge of coffee-like grounds from the stomach, is peculiar to the contagious fever, and is rarely if ever an attendant on that produced by marsh miasm even in its most impetuous and fatal course.

In this state, unquestionably contagious, and hence supposed to be distinct from yellow fever.

This distinction, however, is in both instances at variance with the history of the disease as it has occurred in most other parts of the world, and, more especially, with respect to the symptom of black vomit; which, in its last stage or severer incursions, is common to it from whatever source derived. Nothing is more frequent in the Andalusian or Spanish variety, where the discharge is sometimes inky-black, like the fluid disgorged by the cuttle-fish; and it is thrown forth from the anus as well

But this supposition at variance with the disease, as it has appeared in different places.

* Observations upon the Bulam Fever, &c. 8vo. 1815.

GEN. III. SPEC. II. β. malignus flavus.

as the stomach *. Black vomit occurred more especially in the fatal epidemic of Antigua in 1816, which was decidedly an offspring of marsh effluvium. "The island had for some years," observes Dr. Musgrave †, at whose description we have already glanced slightly, "been peculiarly healthy; and the disease first showed itself in a swampy part of it, and amidst new-comers who were sailors, but from a healthy ship, and themselves in good health on first landing. It soon spread widely, and at length indiscriminately among all ranks, and conditions, and situations —among blacks and whites, the newly arrived and the oldest settlers, in town and country."

Yellow fever at Antigua, as described by Musgrave.

All the varieties exhibited in this epidemic.

Nothing was better calculated, than this fever, to show that almost all the different kinds of fever that occur to us, are capable of issuing from a common source or miasm, merely modified by contingencies: for, in Antigua, they all occurred in different individuals. The disease sometimes *commenced* as an intermittent or remittent, and sometimes in a continued type; it sometimes ceased in four or five days, which was its usual course, and sometimes *terminated* in an intermittent. The head was in some cases chiefly affected; in others the stomach, liver, or some other organ: sometimes the patient died without hiccough or black vomit, though he rarely recovered where these symptoms appeared; Dr. Musgrave recollects but one instance. Recovery was no exemption against a second attack. In new-comers, the tint was of a lemon hue; in native or assimilated constitutions, of a deep orange. The state of the atmosphere at the commencement of the disease presented nothing peculiar.

To the same effect, Dr. Dickson, in his valuable official report. "At Barbadoes and Antigua, I had generally seen the disease of an ardent and *continued* form, and did not fully understand why authors talked of a bilious *remittent* yellow fever, until after the capture of the French and Danish islands. But the anomalies of fever, the shades and changes which it assumes, according to the

* Remarks on the Epidemic Yellow Fever, &c. on the South Coast of Spain, &c. By R. Jackson, M. D. Lond. 8vo. 1821.

† Medico-Chirurg. Trans. vol. ix. p. 92.

intensity of the exciting causes, the state of predisposition, or the spot of residence, could no where be more strongly portrayed, than in the destructive epidemic of Marie-galante in the autumn of 1808, from the most concentrated marsh miasmata; where the different types of fever were CONVERTED into each other, of the worst and most aggravated species I have ever witnessed. Yellow fever in the *continued form;* others with comatose *remittents* or *intermittents;* the exacerbations of which were so violent as to carry off a patient in two or three paroxysms; while others sunk into a low protracted character of fever, resembling *typhus* *."

GEN. III. SPEC. II. β E. malignus flavus. As also at Mariegalante.

In the midst, however, of so much discrepancy, there is still much that is concurrent, and quite enough to establish the identity of the two diseases, if an abundance of other evidence to the same purpose were not at hand. The fever of Dr. Pym, specifically characterized by black vomit, is represented as being peculiarly dangerous and fatal; in that of Dr. Musgrave, this symptom only occurred in the most perilous cases. According to the latter, the severest and most deadly attacks were amongst the new-comers; the mildest, amongst the natives, or those whose constitutions were assimilated to the climate. The yellow hue of the former (and I have already endeavoured to account for this) was of a *deep orange;* that of the latter, a *lemon colour*. Dr. Pym describes three species of fever as common to warm climates, but which differ from each other in their mode of origin, and diagnostic character. In that of least danger, the colour of the surface, he tells us, is of "a *very deep yellow;* in that of higher danger, it is of "a *deep yellow;*" and in the disease before us, which is by far the most fatal, where there is any yellow at all, it is of "a *very pale lemon colour;*" which is, in effect, the very hue ascribed to the severest cases of the Antigua fever by Dr. Musgrave, as the "very deep yellow," or "orange," is to the mildest. So that, examined by their external livery, as well as their internal disorganization, there can be no doubt, that the two diseases are the same. Dr. Pym appeals peculiarly, as a distinctive character of

The Bulam and Antigua fever compared and identified.

* Report, &c. pp. 143, 144.

GEN. III. SPEC. II. β E. malignus flavus.

the Bulam fever, to the deadly and chlorotic paleness, exhibited by the countenance, in its latest stage, or most fatal incursion. But even this only shows that, in such case, the disease makes a mortal attack upon the larger viscera, and especially the liver, from the first; and demonstrates the proposition I have ventured to lay down, that, in proportion as this organ is severely affected, is its inability to secrete proper bile or indeed bile of any kind: and, consequently, that if the irritation only reach a certain point, its secements will be stimulated to emulge a larger quantity and of a deeper hue; a considerable portion of which will be absorbed into the sanguiferous system, and produce the orange tinge, which, in the description of both these writers, peculiarly marks the disease before us in its less fatal attacks. While, if the febrile incursion be so violent as totally to derange the function, and still more the structure of the liver, no bile will be secreted at all, or, if secreted, less in quantity, and consequently less diffusive in colour; and hence only conveying a chlorotic or livid tinge to the face, which, at the same time, exhibits a bloated fulness from effusion or debility of vascular action.

Confirmed by Jackson.

In confirmation of this remark, Dr. Jackson's earlier cases of practice furnish numerous examples;—"examples indeed," to adopt his own words, "of that form of disease when there is a considerable degree of vascular excitement in the early stage, terminating commonly by deranging the functions of an organ of importance—most frequently the liver or stomach. Yellowness and black-vomiting are common; and it is *more especially* to this form, that the name of YELLOW FEVER has been applied: but though the yellowness and black-vomiting be common, they are *not constant* and essential. Determinations sometimes change suddenly, the brain becomes overwhelmed, and stupor and convulsion then cut short the ordinary rapid course *.

Discrepancies reconciled.

Yet, after all, it is not denied by Dr. Pym, nor, so far as I know, by any of the writers on the American or Andalusian fever, that the yellow fever from marsh-miasm

* Hist. and Cure of Fever, chap. iv. p. 133.

ever evinces either of the symptoms that are so essentially ascribed to the bilious remittent produced by contagion, but only that "it is rarely, if ever," to adopt Dr. Pym's own words, "attended with the fatal symptoms peculiar to the Bulam fever, viz. the black-vomiting, and a peculiar bloated appearance of countenance."

Gen. III. Spec. II. β E. malignus flavus.

There would, however, be an almost insurmountable difficulty in reconciling these different descriptions of the same disease, in consequence of Dr. Musgrave's telling us, very decisively, that not a single instance occurred in the Antigua fever of its being received by contagion, were there not strong reason for believing, that this explicit writer suffered himself to be deceived upon this point; most probably, like Dr. Pym and Dr. Jackson, from too close an attachment to the doctrine laid down by Dr. Cullen, that the fever from marsh-miasm does not produce contagion, which is specifically a result of a fever from human effluvium.

Chiefly dependent upon Cullen's hypothesis.

It is impossible to peruse the history of bilious remittents in warm climates offered from all quarters, without seeing, that it may originate from both sources; each sometimes operating alone and sometimes in conjunction with the other, as was probably the case at Antigua, and certainly the case in the yellow fever that raged at Philadelphia in 1793; in which, says Dr. Rush, there were for several weeks two sources of infection, viz. exhalation and contagion. The exhalation infected at the distance of three and four hundred yards: while the contagion infected only across the streets. The more narrow the streets, the more certainly the contagion infected. Few escaped it in alleys. After the twelfth of September, the atmosphere of every street in the city was loaded with contagion; and there were few citizens in apparent good health, who did not exhibit some mark or other of it in their bodies, particularly a preternatural quickness in the pulse, "which occurred in negroes as well as in a few who had had the disease before."

Bilious remittents produced from both marsh and human effluvium.

Evidenced in that of Philadelphia, 1793.

In like manner, the Minorca fever, uniformly originating, as Dr. Boyd observes, in marsh-miasm, frequently becomes contagious*: of which, indeed, he has furnished us with

In the Minorca fever.

* De Febre Minorcæ, &c. 1817.

Gen. III. Spec. II. β E. malignus flavus.

a striking example in his own person: for we are told by Dr. Denmark, that he caught the fever from one of his patients, and nearly fell a victim to it*. But we have had occasion to examine this subject so much at length, in the introductory remarks to the present order, that it is unnecessary to pursue it further, except by introducing the following irresistible illustration.

Report of Blane on the mortality in Ascension Island, 1823.

Sir Gilbert Blane, having been requested by the Board of Admiralty, to examine into the dreadful mortality that took place at the island of Ascension, in the summer of the present year, 1823, reported, and from the manuscript of this report I was permitted to copy, that the officers and privates of Ascension Island were first stationed there in September 1821, in number twenty-eight, and continued in such full health, as to be without the loss of a man, till the arrival of the Bann sloop of war, in May 1823. The Bann had left Sierra Leone towards the close of the preceding March, at which time the yellow fever was raging there with great mortality, and, at the time of sailing, had had no sickness of any kind on board: but, within a few days after sailing, the yellow fever made its appearance, and continued its ravages till the beginning of June; during which time, not less than ninety-nine men had been attacked by it, and thirty-three cut off, out of a crew of one hundred and seven Europeans and officers, independently of twenty-seven African superannuaries, none of whom suffered from the disease. Upon the arrival of the Bann at the Isle of Ascension, an unrestricted communication took place between the sick crew and the healthful garrison, the medical officers of the station having adopted the opinion that the yellow fever is uncontagious. For want of such restrictions, within a few days after the arrival of the Bann, the garrison became affected, now reduced from twenty-eight to twenty-two, in consequence of six men having been ordered to a distant part. And such was the dreadful mortality with which the disease raged, that out of this garrison of twenty-two officers and soldiers, not less than sixteen died, being rather more than three-fourths of the whole. The medical officers were soon,

* Medico-Chirurg. Transact. vi. 301.

though too late, convinced of their delusion, and most unreservedly admitted the quality of contagion; and that the disease they were called to contemplate, was genuine yellow fever will be placed beyond a doubt by the two following symptoms that the surgeon of the Bann particularly notices as among its other characters: "the skin tinged with yellow, assuming a deeper and deeper hue;" and, "before death, the vomiting of a dark coloured fluid, like coffee-grounds;" conjoint symptoms, which, as Sir Gilbert Blane observes, will apply to no other epidemic whatever. GEN. III. SPEC. II. β E. malignus flavus.

How far the tanks or pools of water, within the range of the febrile miasm, from whichsoever of the two sources produced, may become sufficiently impregnated to propagate the disease, has not been sufficiently determined. The Tamul or native practitioners on the Coromandel Coast, ascribe the epidemic that so often ravages their country to contaminated water as well as to contaminated air, and the able authors of the report on the Coimbatore Fever incline to adopt this opinion. Whether water in tanks may be contaminated as well as air.

In France, where, consistently with the popular doctrine of M. Broussais, the disease is supposed to be seated in the mucous texture of the stomach or intestines, and to be dependent on contagion alone, as its means of propagation, a considerable degree of fancy has of late been indulged in, respecting the origin of this contagion; and the fancy has been varied according to the bent of the individual. Thus M. Morreau de Jonnés has endeavoured to show, in a work of some learning, but more imagination*, that the yellow fever however at first produced, which has eluded his researches, has been perpetuated among Europeans, in the manner of plague, leprosy, and syphilis, by a specific poison that has existed immemorially among the Indians of St. Domingo, and was communicated by them to the Spanish fleet, under the command of Columbus, in December 1493; and from this fleet to all the world in succession, in consequence of the close intercourse which took place between the individuals of the new settlement of Isabella, which was colonized out of the fleet, and the adjoining natives. In answer to which, however, it is suffi- Doctrine of Broussais: Morreau de Jonnés.

* Monographie Historique et Médicale de la Fièvre Jaune des Antilles, &c.

Gen. III. Spec. II. β E. malignus flavus.

cient to observe, after Dr. Chisholm*, that the Spanish writers, Herrera and Oviedo, appealed to in proof of this fact, rather unite in showing, that the Spanish settlers received the disease in the first instance from marsh-miasm, and then communicated it to the natives themselves.

Adouard.

While M. Adouard traces the same contagious poison to an effusion or exhalation from the mucous membrane of the stomach of the individual affected, produced by an engorged or congested state of its vessels; and which, in consequence of the gaseous elasticity of the material thus eliminated, escapes by eructation, and propagates itself by being swallowed, and thus communicated to the stomachs of others; on the mucous surface of which it commences a like action, and fructifies a like harvest of contagious matter; the black material, which remains behind, being in his opinion a mere caput mortuum, unendowed with any infectious or other mischievous property†.

Nature of black vomit.

There is much truth in this last position, whatever becomes of all the rest. Black vomit has been by many physicians, and was at one time supposed by Dr. Rush, to

Innocuous.

be vitiated and discoloured bile; but it is now more generally conceived to be, as already stated, grumous or granular blood, let loose from the liver, stomach, or some other digestive organ, from the violent commotion of the disease. Dr. Bancroft affirms, that "it is always insipid;" and we have numerous instances of orderlies in sick rooms, who have had their hands and faces covered with black vomit suddenly ejected from the stomach, which they have taken little pains to wash off, while others have slept in sheets or blankets, stained and inundated with its flow, and yet have escaped the complaint. It marks, indeed, the violence of the disease, and is hence, commonly, though not always, accompanied with the formation of contagious miasm, but in itself it is not a source of contagion. The following instance of disgusting hardihood, though it has been brought forward in proof, not only of the innocuousness of black vomit, but of the uncontagious nature of yellow fever from any source, falls rather within the limit of

* Of the Climate and Diseases of Tropical Countries, &c.

† Relation Historique et Médicale de la Fièvre Jaune, qui a régnée en 1821, à Barcélone; par M. F. M. Adouard, M.D. &c., 8vo. Paris, 1822.

an exceptive idiosyncrasy, in the escape with which it was accompanied, than lays any foundation for a general rule. A M. Guyon, of Fort Royal, Martinique, we are told in the Revue Médicale, had the bravery to wear, for twenty-four hours, the suit drenched with sweat of a soldier who had been labouring under this disease in its worst state; he suffered himself to be inoculated in both arms with the yellow matter issuing from suppurating blisters: he went into the bed of another patient, who had just died of the disease, while it was soiled with excrement; wore, at the same time, his shirt soaked through with black sweat and still warm, and himself slept soundly, and sweated through a good part of six hours and a half, which he dedicated to this delectable trial; he exhibited several other feats of the same kind, and crowned the whole by drinking about two ounces of the black vomit discharged from the dead man's stomach—and nevertheless entirely escaped the fever. Admitting the truth of this marvellous story, there is still no great difficulty in conceiving, that a man, who was so totally torpid to all delicacy of mental feeling, might at the same time labour under a like torpitude of corporeal feeling, and be insensible to various irritants that would be sure to affect others*.

Gen. III. Spec. II. β E. malignus flavus. Singular example of insusceptibility of contagious miasm.

It is probably owing to an idiosyncrasy, producing something of the same kind of insusceptibility to the action of the contagion of yellow fever, that, while the miasmic poison for the most part takes place immediately, it sometimes continues dormant for an indeterminate period. Dr. Jackson has known it remain in this state for two months; and Dr. Bancroft for even nine or ten.

Other exemplifications.

The individual, who has passed through the disease, is rarely attacked a second time. In the opinion of some physicians, he obtains hereby an immunity at least equal to that afforded by the small-pox†. The examples, how-

Disease rarely occurs a second time, without absence from the same climate, though sometimes; yet milder.

* In the Med. Chir. Trans. of Edinb. vol. ii. Dr. Ralph has published the History of Yellow Fever, as it appeared in the queen's regiment in Barbadoes in 1816 and 1817. The facts, mentioned by him, in proof of the disease not being communicable from one person to another, are remarkably strong; indeed, such as leave scarcely any doubt on the subject, as far as the particular fever, described by him, was concerned. EDITOR.

† Report of the Army Medical Board on Dr. Pym's Observations.

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ever, of recurrence are too numerous to justify such a comparison; though, in most instances, where the disease has returned it has evinced a milder character. But this influence on the system, whatever it may amount to, seems to be lost by a short absence from tropical climates; so that those, who return to Europe for a few months, are as open to all the effects of a febrile incursion, as though they had never been within the tropics before.

Voyaging to a different climate restores the susceptibility.

Variable appearances on dissection.

As the larger viscera suffer very differently in different cases of this malady, the appearances on dissection have generally kept pace with the previous indications: for, in some, the integuments of the brain, or even its vessels, its substance, and its cavities have shown marks of inflammatory action, which have not been traced elsewhere; while in others, whose brain has appeared sound throughout, the stomach and its collatitious organs have been found chiefly affected with congestion, rupture, or, still more frequently, an erythematous inflammation, which, in some instances, has spread from the pylorus through nearly the entire range of the intestinal canal. In various other examinations, the chest has exhibited the chief seat of disorganization; and in others again, the urinary organs*. The mucous membrane of the intestinal canal is by far the most frequently injured organ; and this has been laid hold of with no small degree of triumph by M. Broussais and his adherents, as affording a manifest proof of the truth of their favourite doctrine: and that yellow fever can be no other than *une* GASTRITE, or, in still later language, *une* GASTRO-ENTERITE. But it should not be forgotten, that most of the gastric symptoms, and all the severest ones, only occur in the course of the disease, and rarely in a very early part of it; and that they are hence rather to be regarded as effects of overwhelming febrile action upon the delicate and irritable texture of the membrane so severely excited, than as a proximate cause of the fever itself: and the more so as sometimes the biliary system, the lungs or the brain are chiefly affected, and the intestinal

* Bally, sur la Typhe Amérique ou Fièvre Jaune, Paris, 8vo.—Palloni, Obs. Méd. sur la Fièvre régnante à Livourne, &c.—Saverésy, De la Fièvre Jaune en Générale, &c.

canal exhibits fewer proofs of suffering than any of these organs. GEN. III. SPEC. II. β E. malignus flavus.

Unfortunately, the practitioners in warm climates have differed as much in their therapia as in their etiology; for the latter, as might be expected, has greatly influenced the former. Dr. Lind, Dr. Clark, and Dr. Balfour, whose authorities were implicitly allowed and submitted to some fifteen or twenty years since, alarmed at the debility which the system will have to encounter in the second stage of the disease, or as soon as it has run through its inflammatory career, shuddered at the thought of the lancet, and generally commenced with clearing the stomach and intestinal tube by gentle emetics or purgatives, or both, and immediately had recourse to the bark in as large doses as the patient's stomach could bear, paying little or no regard to the remissions or exacerbations of the fever: though the last of these physicians chose calomel as his cathartic, and alternated its exhibition with the bark till the disease was subdued, or had effected its own triumph: at the same time allowing a free use of opium to keep the bark on the stomach, as well as to allay pain and procure rest: to which were occasionally added wine and brandy in considerable abundance, three bottles of the latter having sometimes been given to a patient in less than twenty-four hours, and the same proportion continued for several days*: while recourse was only had to the lancet, where there was obvious proof of very violent local affection.

Remedial process unfortunately discrepant in different hands.

Cordial and sustaining methods.

The times, however, have since changed, and by far the more popular plan of late years has consisted in active, profuse, and repeated venesections, large and quickly renewed doses of calomel, cold affusion, gestation in pure air, and, as advised by some, the bolder exercise and rapid motion of a cart, spring-waggon, or any other carriage†. It was in this manner that Dr. Rush, regarding the inflammatory impetus as the sole cause of danger, boldly resolved to lay prostrate if possible the morbid Hercules at its birth, by bleeding, according to the state of the pulse,

Alterant and depleting methods.

* M'Cabe, in Edin. Med. and Sur. Journ. Oct. 1819.

† Hist. and Cure of Fever, by R. Jackson, M.D. Part I. Chap. XI. pp. 267. 270.

GEN. III. SPEC. II. β E. malignus flavus.

two or three times a day during the first two days, and by following up the same plan as long as a single germ of an inflammatory diathesis should continue manifest. "I paid no regard," says he, "to the dissolved state of the blood, when it appeared on the first or second day of the disorder, but repeated the bleedings afterwards, in every case, when the pulse continued to indicate it. It was common to see sizy blood succeed that which was dissolved. The dissolved appearance of the blood I supposed to be the effect of a certain action of the blood-vessels upon it. The presence of petechiæ did not deter me from repeating blood-letting where the pulse retained its fulness or tension." And he affirms, that both petechiæ and vibices disappeared in various cases after bleeding. This plan he often pursued through the fifth and even the seventh day, in the course of which period, from a hundred to a hundred and twenty ounces of blood were frequently taken away by six or eight applications of the lancet.

Rush's practice as to bleeding;

as to purging;

His purgative plan was not less alert. Ten grains of calomel and fifteen of jalap, was the force with which he opened his remedial attack, and which he repeated every six hours, till the alvine canal was effectually evacuated. This mode of treatment, he tells us, he was led to by accident; and with it he became as successful as he had been unsuccessful under the tamer and more established method.

highly successful.

Employed with different views.

Under this plan of treatment, the venesection and the calomel were employed on a principle of depletion alone, and of diminishing a real or supposed increased action; and the former on the principle of a *gradual* depletion; Dr. Rush rarely venturing to withdraw more than sixteen ounces of blood at a time, though the venesection was as closely repeated as the patient's strength was conceived to be capable of bearing. Both these remedies have, however, still more lately been employed on different grounds, and under a different mode of management. Blood, instead of being taken away gradually and successively, has by many, and especially by Dr. Jackson, who seems to have introduced the practice, been drawn off, on the accession of the disease, to thirty or forty ounces at once, with a view of making a decisive impression upon the system; the same bold use of the lancet being repeated within

Sudden and decisive depletion.

three hours, if such impression be not effected: after which " such powers are recommended as *stimulate* to a train of action, congenial to the action of health*:" and calomel, instead of being employed as a purgative, has been enlisted as a powerful alterant and deobstruent, and persevered in to salivation, by doses of from five to five-and-twenty or thirty grains every third or fourth hour, according to circumstances, till this point is obtained; which, however, is not regarded as important in itself, but as showing, that the system is sufficiently under its influence. Dr. Chisholm seems fairly entitled to the honour of having first tried and recommended mercury with this intention†. " It ought," says he, " to be a general rule of practice to consider *all* remittent fevers within the tropics as symptomatic of local congestion, and inflammation. It is a rule, the observation of which can never be injurious—almost always positively beneficial—and the neglect of which is always productive of harm. Under this view, the judicious practitioner will consider the *tendency* to congestion, as the object of his main attention and direct his efforts to prevent it. Upon the whole, then, the treatment is reduced to one sentence:—bleeding to the extent necessary, plentiful alvine evacuation, MERCURIAL PTYALISM, and cold affusion‡;" and he adds, in another part of the same volume, " Let it never be forgotten, that, at whatever period of the disease salivation is excited, whether the supposed signs of putrefaction have appeared or not, the accession of it is the certain signal of cessation of disease, and of returning health§."

GEN III. SPEC. II. β E. malignus flavus.

Calomel as a deobstruent rather than a purgative.

Salivation a supposed sign of its succeeding.

This general plan of Dr. Chisholm has in the present day become highly, and perhaps chiefly popular; and is powerfully recommended from personal experience of its advantage by Dr. James Johnson‖, Dr. Burnett¶, Dr. Boyd**, Dr. Denmark††, and a long list of valuable authorities, who have practised in the one or the other of

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* Hist. and Cure of Fever, B. II. Ch. XI. pp. 267. 293. † Ibid.
‡ On the Climate and Diseases of Tropical Countries, pp. 46, 47.
§ Id. p. 215. ‖ Influence of Tropical Climates, &c., pp. 50, 51, et passim.
¶ On the Bilious Remittent Fever of the Mediterranean.
** De Febre Minorcæ, &c., 1817.
†† Medico-Chir. Trans. vol. vi.

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the Indies; all of whom, however, combine the use of calomel with copious bleeding; the former being regarded as the "sine qua non," or the "sheet-anchor," by some of them: and the latter being designated by the same terms, by others.

How far such discrepancies capable of reconciliation.

On a cursory glance, these diversified modes of treatment appear, in many respects, to be directly hostile to each other, and to establish an utter absence of any one therapeutic principle common to the whole; but a closer attention to the subject will show us, that there is not necessarily any opprobrium medicorum in the discrepancy, except what results from becoming so exclusively the champion of any one of these respective modes of treatment as to bend every case to its own limits, and thus convert it into a bed of Procrustes: for there seems abundant reason for believing, that, in different situations, or under different circumstances, each of these plans has proved equally judicious and successful; since we have seen, that the disease, under different incidents and coadjuvants, has exhibited every variety of violence, and inclined to almost every variety of febrile type. Where there is not much impetuosity in the onset, no great derangement or prognostic of inflammatory congestion in the larger viscera, where the remissions are regular, and the epidemy is pretty uniform in its character, large and repeated bleedings, as a general rule, must prove mischievous. They will not shorten the career of the disease, but they will convert the remittent into a continued fever: and we shall in the latter stage of its course stand wofully in need of that strength which we shall have squandered away at first, if we have commenced with profuse venesection.

Where copious venesection and purging must be mischievous.

Further illustrated.

This is more especially the case where the disease makes its attack slowly and insidiously, assuming in some degree a typhous guise, as in the Guzzerat form, described by Mr. Gibson of the Bombay Medical Department*: in which he tells us, that the debility is so great and instantaneous, as well as the tendency to putridity, that bleeding is never to be hazarded, except occasionally, to the robust new-comer; and in which, even spontaneous hemorrhages,

* Edinb. Med. and Surg. Journ. vol. xi.

instead of proving critical, have always seemed to hasten death, and, indeed, without a single exception in his experience, to prove fatal. And it was probably from a survey composed largely of cases of this kind, though in the West Indies, that Dr. Hunter, in a tone still more generally proscriptive, and which will meet with few defenders at present, thought himself justified in affirming respecting venesection, that even "in such cases as seemed most to require it—for example, where the patient was young, strong, of a full habit, and lately arrived from Europe—when the pulse was quick and full, the face flushed, with great heat and head-ache—and all these at the beginning of the fever—bleeding did no good*."

GEN. III. SPEC. II. β E. malignus flavus. This view sometimes carried to an extreme.

Dr. Pinkard, in his "Notes on the West Indies," has given a very interesting description of his own sufferings under this disease, and of the remedial process to which he had recourse. His attack commenced in the more common manner, slowly and insidiously, and demanded eight or nine days to reach its acme. His head, stomach, and at last his bowels, were severely affected, especially the first; but his intellect continued sound; and though the symptoms were vehement, there seems to have been little tendency to that violent visceral inflammation which in the stage of debility is so apt to produce gangrene; and consequently he had no black vomit. He lost twelve or fourteen ounces of blood at the commencement of the disease, and took a strong dose of calomel, which considerably relieved the pain in his head and eyes, and diminished the restlessness; but the thirst, heat, and dryness of the skin were still intense; and his weakness became extreme. Affusions of cold water, old hock, opium, and bark, were made use of in profusion, and each seemed to afford great relief. Yet, on the subsidence of the fever, he represents his feebleness as most deplorable. Here a freer use of the lancet could have been of no avail, and, had not the author most judiciously forbade its further employment, in all probability, he would never have been the historian of his own case†.

Pinkard's account of his own attack.

* On the Diseases of Jamaica, p. 118. 3d edit.

† Vol. III. Letter XII. p. 134.

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Where both means must be beneficial, and ought to be employed.

On the contrary, if the disease make its incursion with great impetuosity; if the pulse be full and strong, or even if it be only hard, and there be great tendency to inflammatory congestion in any of the larger organs, as the head, the chest, or, as is far more common, the stomach, the spleen, and the liver, we cannot well be too bold both in bleeding and purging; and the plan laid down by Dr. Rush is by no means an exaggeration of what ought to be pursued. It may be, that eight-and-forty or even four-and-twenty hours are the whole we have to work in; and unless we can completely break down the inflammatory diathesis, the organs mostly affected will in all probability become gangrenous in a day or two, the oppressed blood-vessels will give way, and we shall have a chlorotic or livid skin, cold extremities, black vomit, and all the other apparitors of death, before the tamer plan of aperients and diaphoretics could have time to produce the slightest impression on the system. Generally speaking, it will be best to bleed in an erect position, for the sensorial excitement, which is what we are chiefly to aim at, is best cut down by syncope, which an erect position will soonest induce; and we may hence save the expense of several subsequent bleedings.

Dr. Pym speaks with a very just discrimination upon this subject, in observing that, while the Bulam fever, or the disease in its most violent attack, is relieved by free venesection, the yellow fever, more properly so called from the brighter hue on the surface, or, in other words, that which is slighter in its incursion, will not often endure the lancet. Dr. Musgrave's statement seems to oppose this assertion, for he distinctly tells us, that "blood-letting in both forms is our sheet-anchor; the only pillar on which we can securely rest any hope of *extensive* success." The Antigua fever seems to have exhibited great severity in most instances, and hence called for a courageous course of practice with perhaps few exceptions. Yet the following paragraph proves, that it did admit of exceptions, and softens down almost to unanimity a clash of opinion and practice which after all is more ostensible than real: "We have repeatedly," says he, "with success, taken upwards of forty ounces of blood at one bleeding. With equal success we have in several cases renewed the bleeding up to the

third, and even the fourth time; but, generally speaking, those which require such reiterated evacuation evince an obstinacy NOT LIKELY TO ADMIT OF A FAVOURABLE RESULT UNDER ANY MODE OF TREATMENT. IT MUST ALSO BE REMEMBERED, THAT EVERY ONE WHO APPLIES FOR ASSISTANCE IS NOT ALIKE ABLE TO BEAR THIS LIBERAL DEPLETION." It only needs to be observed further, that the bowels were emptied, as they ought to be, by calomel or jalap, or some other active purgative; the head was shaven, and cold ablution preferred ordinarily to cold affusion, because of the fatigue endured under the latter. Bark was then instantly given, and, where the stomach would bear it, in the form of powder. Mercury, with a view of exciting salivation, was seldom tried, and not relied upon. In effect, in the milder cases it was not wanted for this purpose, and, in the more urgent, there was no time for its use.

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There can be no doubt, however, of its being highly advantageous in a great multitude of cases, and of general benefit in various forms of this destructive epidemy. For whether we contemplate the fever as local or unrestrained, as consisting in violent universal excitement, or, according to M. Broussais, in an inflammation of the mucous membrane of the stomach or duodenum irritating the bile-ducts, and the liver itself by sympathy; whether as threatening congestion to any of the larger organs, or actually accompanying congestion; there is no medicine which, *primâ facie*, affords a better prospect of relief than mercury, from its general action on the excernent system, as well as its specific action on the intestinal canal and the salivary glands. It must, however, be admitted, that it is only under a particular condition and tone of the vascular frame, that it can at any time be employed with good effect; and hence not only is a sound judgment constantly demanded in its application, but much important time is often lost in preparing the system for its remedial introduction. In the case of ENTONIC or strong vascular action, it is necessary first of all to lower, and in the case of ATONIC or weak vascular action, to raise the living power to the proper standard before ptyalism can be obtained, which is the grand test of its having taken effect: and hence, to accomplish the former, bleeding, purgatives, and cold affusion,

Mercury beneficial when discriminately used.

Other remedies usually employed before or in conjunction:

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must be first called upon to exercise their respective powers; and in the latter case, tonics and cordials; upon which last ground Swediaur tells us, that the most efficacious plan of treatment consists in giving calomel and columba, in doses of *thirty-five* grains each, five or six times a day*. It is truly said, indeed, by the advocates for mercury, that such other remedies are all valuable adjuvants; and this is so far from being denied by those who are hostile to the use of mercury, that they affirm, on the contrary, that the benefit ascribed to this medicine, when it has once obtained a sway over the system, ought rather to be attributed to these adjuvants themselves; which would have proved still more beneficial had they been left to their own power and intention alone. Mr. Gibson, who is a strenuous advocate for the use of mercury upon the principle now adverted to, very candidly admits both these causes of impediment. "In hotter climates," says he, alluding to the debilitating province of Guzzerat, "the PHLOGISTIC state of the system is adverse to the introduction of mercury: but the prudent abstraction of blood happily reduces it to that standard which is most favourable for its action. In India, however, in fever, the disease in which this is *most speedily* to be desired, the same means would, but in very few cases, be admissible: for the DEBILITY IS SO GREAT and instantaneous, as well as the tendency to putridity, that only in the robust new-comer is it, if ever, to be hazarded. It would seem, that DEBILITY AND THE PLETHORIC SYSTEM, ARE EQUALLY INIMICAL TO THE SPECIFIC MERCURIAL ACTION. If the patient is fortunately invigorated sufficiently to give the mercury influence, and BEFORE ANY ORGAN ESSENTIAL TO LIFE IS INJURED, by the strictest nursing and attention afterwards, the recovery is almost certain, all morbid action yielding from the moment ptyalism is brought on†."

to which many ascribe the whole benefit.

Gibson.

Estimate of its salutary and injurious effects.

Even in cases, however, in which the mercurial action is fortunately excited, the same intelligent writer tells us, that he has frequently met with a very serious evil resulting from the mercury itself; for such, says he, is at times

* Nov. Nosol. Meth. Syst. i. 28.

† Edin. Med. and Surg. Journ. vol. xi.

the profusion of the ptyalism when once induced, that the most disagreeable consequences succeed, and the convalescence is long and precarious; on which account he laments, that we have no criterion to determine how far we may proceed with the mercurial process, and when we ought to stop. Dr. Bancroft advances much farther than this, and asserts that not only has the salivation retarded the convalescence, and produced very troublesome affections of the tongue, mouth, and throat, with other ill consequences, thus acknowledged by its advocates, but that the salivators, even when they have been free from these evils, have not been more successful than other practitioners; and he particularly alludes to the admission of Dr. Rush, who was not unfriendly to the mercurial mode of treatment, that "in the City Hospital (of Philadelphia), when bleeding was sparingly used, and the physicians depended chiefly upon salivation, MORE THAN ONE-HALF DIED of all the patients who were admitted*." For like reasons, Dr. Jackson speaks with as little satisfaction of the same practice, not only upon his own experience but even upon that of Dr. Chisholm himself. Alluding to the high recommendation of mercury by the latter, he observes, "the detail of his testimonies does not warrant a conclusion so favourable; for the proportion of mortality in the detachment of Royal Artillery, upon whom this practice is supposed to have been first tried, has perhaps scarcely ever been exceeded in a tropical climate. Further, it is a common observation, that, where salivation actually takes place in continued fevers, it seldom shows itself till the violence of the symptoms has evidently abated: hence, a suggestion arises that the appearance of salivation is only an indication of the departure of disease;—no proof exists that the operation of the mercury is the cause of this departure. Such are the remarks, which occurred in reviewing different modes of treatment in the hospitals of St. Domingo; to which it will not be superfluous to add an experiment made at the Mole in August 1796 by Mr. Lind, Surgeon to Jamaica. Out of fifteen cases of fever, put under the care of Mr. Lind, on *the first day* of the dis-

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Bancroft.

Jackson.

* Essay on the Disease called Yellow Fever, &c. 8vo. 1811.

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ease, and treated with the utmost attention, five died; in three of whom salivation actually took place; five recovered, in whom no salivation took place; in the other five, who also recovered, salivation was evidently established; but, as is usual, not till the violence of the symptoms had begun to abate. Out of four who were put under his care on *the second day* of the disease, no one died; but one only was affected by the mercury; one brought to the hospital on *the third day* of the illness, died: mercury was employed, but no salivation took place; one, on *the fourth*, likewise died, without marks of salivation; one, on *the fifth*—the salivation was established, but the disease proved fatal. In none of the above cases were less than ten drachms, and in most not less than two ounces of strong mercurial ointment rubbed into the legs and thighs, with the employment of all other means, which seemed calculated to promote the expected effect*."

Hence the question still doubtful.

The question, therefore, to say the least of it, is still open; and, admitting all that can be said in favour of employing mercury as a sialagogue, the evils which flow from the uncertainty of its action, both in respect to time and degree, and its frequent inroads upon the constitution, even where it has been of use, are serious and important.

Emetics.

On the employment of EMETICS, there is now no longer any question. It is admitted, on all hands, that, in the irritability of the stomach and its collateral organs during this disease, they are generally improper, and almost constantly augment the morbid action; on which account, even the antimonial sudorifics are of very doubtful efficacy: and, whenever ventured upon, should be combined with opium. And for the same reason, the use of carriage exercise, so strongly recommended by Dr. Jackson, and some of the most distinguished American practitioners, even "under the inconveniences of a scorching sun, of clouds of dust, and of a jolting cart†," has rarely been put to the test, except in the emergency of the sudden retreat of an army: and has hardly been allowed to enter into the catalogue of ordinary remedies.

Carriage exercise.

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* History and Cure of Fever, Part I. ch. xi. pp. 293, 294.

† Jackson, ut suprà, p. 287.

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General summary.

The general treatment, indeed, may be summed up in few words. Copious bleeding, a free repetition of active purgatives, combined with opium where the ventricular irritation is considerable, in the commencement of the fever; frequent sponging, or affusion of cold water, with an interposition of the neutralized salts as diaphoretics, during its progress; and bark and other tonics, as soon as the febrile commotion begins to subside. The more powerful and violent remedies of repeated bleedings to faintness, mercurial salivation, or the stimulants of spirits, ether and opium, being alone added to the list, according to the circumstances of the individual case.

Pure air by ventilation the most important mean of cure.

Pure air by a ventilation of the atmosphere, is however a more powerful remedial agent than all the rest put together; and to this position I apprehend every class of writers will accede, how much soever they may differ upon other points. The Army Medical Board is therefore peculiarly entitled to the gratitude of the country for the great pains it has taken to give improvement to this important object, by an establishment of open and wide-spreading encampments, instead of confined and unperflated barracks; and no man can hear of the desirable success with which this enlightened measure has been attended without exultation. The attempt, as I am permitted to state from the manuscript documents in the possession of the Board, has been made at Barbadoes, Tobago, and Antigua; not more than four individuals being allowed to occupy a single tent, instead of ten or twelve, which is the usual proportion at home: and the success developed in these islands has already become so considerable and decisive, that government has consented that a like trial should be made in all the islands around them. In the affected crew of the Pyramus, distributed by Dr. Hartley into an encampment at Antigua, in the year 1822, not a single case of fever was found to travel from one individual to another. We cannot wonder therefore at beholding this able officer anxious, in his report for 1823, that the same plan should be extended to other places, and adopted in other diseases. "In cases of sickness," says he, "and especially in yellow fever, I feel convinced in my own mind, that nothing could prove so beneficial in checking the ravages of this disease as separating the troops; and particularly

Establishment of encampments for this purpose; and their great benefit.

Adopted in Barbadoes, Tobago, and Antigua: and about to spread further.

Benefit illustrated in the crew of the Pyramus.

Hartley's encomium.

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by removing them to some distant dry field from the locality of the attack. Nothing could more immediately substantiate the advantages of removing and encamping a body of men, than the result in the Pyramus's crew."

Exemplified at Barbadoes.

In Barbadoes, where, as I have just observed, the same improvement has obtained a footing, the mortality for the last two years is almost incredibly abated. I have examined the tables, subjoined to the annual reports in the office of the Army Medical Board, and have found that, from having been upon an average of seven years, about one in twenty-one of the sick list, in 1822, the mortality was only one in twenty-four; and in 1823, only one in thirty-five. In this last year, however, it should be observed, that the hospital list was somewhat enlarged by the occurrence of an influenza unaccompanied with much danger; yet the aggregate of patients amounted to not more, than about a hundred beyond those of the preceding year. I am ready to allow, that several other important regulations, for which we are equally indebted to the vigilance and the judgment of the Army Medical Board, may have contributed to this salutary change; but the greater part of it is still, perhaps, to be ascribed to the new plan of encamping. I cannot give a better description of the adjuvant regulations I am now referring to, than by adopting the words of Mr. Tegart, an enlightened inspector of hospitals at Barbadoes, who, in his manuscript report for 1823, thus enumerates them, and at the same time confirms the ameliorated health of the soldiers quartered in that station, and to which I have just referred. "The loss in that year," alluding to 1822, or the preceding, "was so comparatively small with former ones, that I hardly hoped to send so favourable a one again. This return, however, exceeds greatly any hopes I could have anticipated; being not one half the average amount of the preceding six years: and not a sixth part of the yearly loss sustained in the fourteen years antecedent to those. There are many reasons for this favourable change; the men are better clothed, better fed, and better looked after by their officers; there are many local improvements in the vicinity of the barracks, which formerly were not much attended to: such as draining swampy and marsh ground; clearing away brush-wood and long grass, which har-

Other coincidents.

Tegart's report.

boured moisture, and emitted, at certain seasons, noxious exhalations, producing fever and other diseases, the treatment of which was very different from that of the present day. I believe most sincerely, that we are also indebted for the favourable comparison in the scale of mortality to the improved education of medical men, to the discoveries in the various branches of medical science, and to the rationale of medical practice." The writer of this work cannot avoid adding his conscientious assent to the correctness of these views.

GEN. III. SPEC. II. β E. malignus flavus.

There is another variety of malignant remittent, which has been known to medical practitioners from the time of the Greeks, though less frequent than the yellow fever, and which, by Hippocrates, has been denominated CAUSUS; as it has by later writers, who have only translated the Greek term, been called FEBRIS ARDENS, ARDENT OR BURNING REMITTENT. From its being usually accompanied with much disturbance of the stomach and intestines, it is called by Professor Frank, *febris gastrico-inflammatoria*, as the last variety is *febris gastrico-nervosa*. In Hippocrates it is briefly described as a fever, characterized by extreme heat, violent thirst, a rough and black tongue, complexion inclined to yellowish, saliva bilious. There is commonly an acute aching in the head, nausea, great anxiety of the præcordia, with frequently a gnawing pain at the stomach. The bowels are unusually costive, particularly at the commencement of the disease. The tongue, mouth, nostrils, and, indeed, the whole surface of the body, are parched and fiery-hot, whence, indeed, the Greek name for the disease; the pulse is full and strong; the voice hoarse; the breathing short and quick, with sometimes a slight cough, and occasionally delirium.

γ E. malignus causus.

How described by Hippocrates.

Febris gastrico-inflammatoria of Frank.

It chiefly attacks the young and the vigorous, who bear the attack better than old persons. The causes to which it was formerly ascribed, are long exposure to the heat of the sun, great fatigue from undue exercise or labour, or too heating a diet. It has of late, however, been supposed, and with much plausibility, from its frequent occurrence towards the autumnal equinox, and especially from its resemblance to the yellow fever, that, like the latter, its ordinary remote cause is the miasm of swamps and marshes. And, if so, it affords us a proof, that,

Causes various.

Probably febrile miasm.

GEN. III. SPEC. II. γ E. malignus causus.

under certain modifications, febrile miasm issuing from this source may, as I have already suggested, produce a caumatic or inflammatory, as well as a synochous or typhous tendency, in constitutions predisposed to this character of fever*; for the causus is, in fact, whatever be its cause, a vehement inflammatory remittent. It is on this account, that Dr. Mosely conceived the causus of the ancients, and the yellow fever of the present day, to be one and the same disease; whence he applies to the latter the Greek name of causus. This, however, is not quite correct: for in the real causus, the burning heat is more intense, the thirst more intolerable; while the stomach is generally less irritable, and will bear vomiting with advantage: and, in the second stage, the chilliness which, in the yellow fever, is merely accompanied with horripilation, and is a mischievous symptom, in the causus, is accompanied with a smart rigor, which often terminates in a copious and salutary sweat. The process, moreover, in the causus, generally lasts only four days, and is terminated, when left to itself, by a critical diaphoresis, vomiting, diarrhœa, or nasal hemorrhage; but, if the fever be not carried off in this way, it commonly becomes fatal.

Confounded with yellow fever by Mosely.

Distinctive character.

Yet nearly connected.

We have, nevertheless, satisfactory proofs, that though the causus and yellow fever be not precisely the same disease, both often issue from the same febrile miasm, and sometimes run their race conjointly; the difference depending chiefly upon the idiosyncrasy, or the peculiar condition of the constitution at the time of attack.

Proofs: from Jackson:

Thus, in that most formidable assault of yellow fever which took place at the Mole in St. Domingo, in the autumn of 1796, Dr. Jackson tells us, that "the symptoms of the disease among a set of men vigorous by nature, and often transgressing the rules of temperance, were *ardent* and *violent*, with much vascular excitement in the early periods, often subsiding on the third day, and terminating rapidly in black vomiting, and a formidable train of horrors†." And he has since met with the same form in

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* Devèze, Traité de la Fièvre Jaune. 8vo. Paris, 1820. Saverésy de la Fièvre Jaune en générale, et particulièrement de celle qui a regnée à la Martinique en l'an 1803–4.

† Hist. and Cure of Fever, &c. Part I. ch. ii. p. 66.

Spain, which, in effect, constitutes his first division of the Andalusian fever*. And, hence, Dr. Chisholm informs us, that "the diseases, which originally proceed from marsh exhalations, may be so impressed with the action of irregular temperature as to render them *highly inflammatory*, although the character and nature of the original are so manifest as to make a mode of treatment suitable to the two diatheses, or rather the mixt diathesis, prevailing in the system necessary†." And in proof of his remark, he has quoted several instances from the report of the Army Medical Board, of which, that which occurred in the year 1812, at Brimstone-Hill, St. Christopher's, is probably most worthy of notice, on account of the topography and general healthiness of the spot, which is described as follows:

Gen. III. Spec. II. γ E. malignus causus. from Chisholm. Army Medical Board.

"Situation N. Lat. 17°—soil light and dry—composition rock and sand—elevation six hundred feet—distance from the sea a quarter of mile. Barracks exposed to currents of air and strong winds, directed on them by ravines. No swamps in the neighbourhood. Change of temperature sudden, from 70° to 80° and 90° in the course of a few hours. RAIN ABUNDANT. Probable cause, previous hot dry weather, ill-ventilated and ill-constructed barracks, some of them bomb-proof. Epidemic cause unknown; and prevalence of the disease cannot be accounted for." St. Christopher's.

The cause, however, is not difficult to assign; and, in truth, we have already adverted to it in describing the occasional origin of yellow fever: for however dry and elevated the situation may be, yet on the descent of copious and continued rains, such as are here set down, a temporary swamp is very soon produced, and of sufficient power, in hot climates, to generate even "on a light and dry soil, and a sandy rock," febrile miasm enough for the severest epidemic; and especially where such miasm receives the collateral aid of ill-ventilated barracks, and currents of cold air blowing down long ravines directly upon the troops while in a state of perspiration; and producing a sudden Explained.

* Remarks on the Epidemic Yellow Fever on the South Coast of Spain. Lond. 8vo. 1821.

† Manual of the Climate and Diseases of Tropical Countries, &c. part iii. chap. i. 8vo. Lond. 1822.

GEN. III. SPEC. II. γ E. Malignus causus.

abstraction of animal heat, more mischievous, perhaps, within the tropics, than on the banks of the Copper-mine river during the snows of the winter season, where, as Captain Franklin informs us, the Chipewyan Indians find them the most detrimental and destructive to life of all the numerous and heavy evils to which they are exposed*.

The fever continued through the winter, evidently in this case kept up by its having become contagious. It was at first confined to one of the barracks occupied by a company of the 25th regiment; and its symptoms are thus briefly but forcibly described: "Type continued:—thirty-four admissions from this company alone: symptoms in all, of a most unfavourable character from the first attack; great headach, sickness, and vomiting; pulse full and hard; eyes inflamed; face flushed; ardent heat of the skin; in many cases yellowness of the whole body on the second day of the disease. The entire number of cases were four hundred and twenty-two: of which, not fewer than one hundred and eighteen died, affording a mortality that treads close upon the heels of that in the plague.

Treatment.

In the treatment of this variety, the advocates for copious bleeding and for free doses of calomel, may shake hands; for both may be allowed with liberality. The calomel, however, is found most successful when combined with antimonials or Dover's powder. Free purging is also to be strongly recommended: the means, in effect, whatever they are, must be vigorous to be of any avail:—for the disease itself is of great vigour and rapidity; and, unless prostrated at the onset, will soon prostrate the patient. In conjunction with this process, we may also adopt that of Hippocrates, who, in the burning remittent of his own day, employed cold applications in every way; the coldest possible drinks; and the coldest possible clysters, and ablution with cold water applied to every part of the body†. Under proper regulations, there is no doubt of the advantage of such a treatment; and the medical process of the continent, as well as that of our own country, throngs

Cold drinks. Cold water.

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* Narrative of a Journey to the Shores of the Polar Sea, &c. p. 249. Lond. 4to. 1823.

† Περὶ Παθῶν. p. 518, l. 18. 51. p. 419. l. 37.

with cases, in which it has been found serviceable. Marquet recommends the application of cold air as well as of cold water; and gives an instance of a rapid cure in one, who, in a state of delirium, exposed himself naked to the cold of the atmosphere out of doors*. And on this account Schäffer advises that the patient, in any acute fever accompanied with dry burning heat, should be carried forth from his chamber, on a mattress, and thoroughly ventilated abroad†. Dr. Jackson would indeed have him ventilated in any way, even on a cart or waggon, if there be no easier conveyance.

Gen. III. Spec. II. γ E. malignus causus. Cold air.

In the preceding varieties, the malignant remittent has shown a tendency to an inflammatory or a synochous career. Under particular circumstances, however, it evinces a like inclination to a deep nervous depression, sensorial debility, or A TYPHOUS CHARACTER from the first. And this, whether the febrile miasm originate from a decomposition of marsh, or of human effluvium; for the records of medicine furnish us with innumerable instances of both. In the two cases, however, there are a few slight variations in the range and mode of its action, the laws of which I have already endeavoured to lay down as far as we are acquainted with them‡; and hence M. Bally, confounding this variety with proper yellow fever, calls the latter, the *American typhus*, and makes two divisions of it, a contagious and an uncontagious, according to its degree of violence§. This modification of the disease, therefore, is best distinguished by the name of ASTHENIC REMITTENT.

δ E. malignus asthenicus. Originate both from marsh and human effluvium.

The epidemics of this kind, accompanied with most mortality, are those which arise from a decomposition of human effluvium in the midst of filth, poverty, or famine, great heat and moisture, crowded multitudes, and a stagnant atmosphere: for here we have almost all the auxiliaries of febrile miasm operating for its production. The remittent epidemics of Cadiz and Malaga seem chiefly to have been of this kind: and they are the common pestilences of dispirited armies, maintaining their ground with

The most fatal cases from human effluvium. Exemplified in the late epidemics of Cadiz and Malaga, chiefly of this variety.

* Observations sur la Guerison de plusieurs Maladies.

† Versüche, i. p. 164. ‡ Vol. ii. p. 75.

§ Sur le Typhus Amerique, ou Fièvre Jaune, &c. Paris, 8vo.

GEN. III. SPEC. II. δ E. malignus asthenicus.

difficulty in the midst of great carnage, surrounded by the dead and the dying, reduced to short provisions, and worn out by the fatigues of the campaign. The writings of Sir John Pringle are full of examples of this kind: and Professor De Haen has given a striking description of the same in his account of the contagious epidemy that committed such tremendous havoc throughout the Prussian army, at Breslaw and its vicinity in the middle of the last century, constituting the disease to which M. de Sauvages has given the name of tritæophya Vratislaviensis. It was peculiarly distinguished by irregular action, great debility, and overwhelming dejection of mind. The lipyria, or coldness of the surface, with which the disease opened, rarely yielded to any general re-action, for the extremities seldom became warm, and were often rigid and convulsive; at the same time that the interior parts burned like a fire; the head and stomach suffered with acute pain; there was great anxiety about the præcordia; and so exquisite a soreness over the entire surface, that the patient had the greatest dread of being exposed to the contact of the external air, a mere change of the temperature being intolerable. De Haen himself at length became a prey to the infection, and his attack commenced as thus far stated. On the fourth day, he tells us, all his symptoms were worse, his feet quite chilled, but his hands red, and agitated with convulsive motions; he had occasional vomitings, and was terrified with the image of impending death. On the eighth day the pulse was convulsive, and he was continually crying out from his pains. On the ninth, delirium, and a rejection of grumous blood from the stomach. On the eleventh, perspiration and a tranquil pulse, but the voice was broken, the speech was interrupted, and the teeth grated. On the twelfth, the jaw was convulsed, there was a sardonic laugh and deafness. On the fourteenth, an icy coldness covered the whole body, accompanied with a cold sweat, but a frequent use of ablutions afforded relief. On the eighteenth, he had a vivid delirium, but fainted on being taken out of bed; which was succeeded by hunger, copious sweats, and profound sleep, with an intolerance of noise. At this time, every thing appeared new and extraordinary; a feeling described by many sufferers as soon as the violence of the disease begins

Noted epidemic of Breslaw.

De Haen's statement of his own case.

to abate, and which Dr. Pinkard has very strikingly noticed in his own case. The symptoms varied considerably from this period, and he had still many dangers to contend with. He recovered, however, though very slowly, and with numerous drawbacks; for, on the thirty-sixth day, he had a cholera, and on the forty-eighth, his skin scaled off and he lost his nails.

GEN. III. SPEC. II. δ E. malignus asthenicus.

Towards the close of the disease, the skin was covered with a scabid or ichorous eruption, rather than petechiæ; evidently from debility of the capillaries: a fact that has often occurred even in the slighter attacks of this variety of remittent in our own country, when it has occasionally broken out, as in 1765, among the troops stationed in the vicinity of Portsmouth, and is particularly noticed by Dr. Lind. In this last case, it was often suspected to be the itch, to which it had a very near resemblance: and it is highly probable, that, in many instances, it was so, and that the *acarus scabiei* found, in the sores, a convenient nidus for the deposit of its eggs.

Sequel of the disease.

There are situations, however, in which the febrile miasm, producing this low variety of remittent, is generated by a decomposition of the stagnant matter of humid marsh-lands; such chiefly are the regions about Cape Coast, in Africa, especially when visited by the foul and smouldering harmattan, and about Gombrow, or, as Sir John Chardin calls it, Bander-Abassi, on the Gulf of Persia*: in which last place the mortality is so severe between the months of April and September, that the deaths are ordinarily calculated at nine out of ten of the inhabitants: and this notwithstanding that most of them retire during such period towards the mountains, and all mercantile concerns are relinquished; so that, says the chevalier, "la moisson est fermée, comme un parle." The diseased are commonly removed higher up the country as soon as they sicken; but, whether removed or not, they usually die in four or five days.

Exemplified as produced from stagnant marshes. Cape Coast, Africa. Gombrow on the Persian coast.

There can be no doubt, that, in both these places, the danger of the disease may be augmented by the dense and stinking vapour that is perpetually blowing upon them

Danger augmented by dense offensive vapours.

* Voyage du Chevalier Chardin, &c. tom. ix. p. 511—518.

GEN. III. SPEC. II. } E. malignus asthenicus.

during the pestilential season, the "puantes vapeurs de la mer," as Sir John expresses himself, "qui faient bondir le cœur la première fois qu'on les sent." These on the African coast are impregnated from the impenetrable mangrove swamps of the interior of Guinea, and on the Persian, from the saline and sulphurous exhalations of the several adjoining islands, which the winds of the season pass over in their periodical sweep: and the copious disengagement of hydrogen, whose presence the intolerable stench seems to indicate, will account in no small degree for the deficiency of living power, which so peculiarly distinguishes the malignant remittent in these quarters. In the latter region, indeed, some such debilitating influence seems to operate habitually: for the ingenious author thus quoted adds, that "the nations carry in their complexion and constitution the proofs of their malignant atmosphere, being yellow and ghastly from the age of twenty-one, and decrepid at thirty." Of the destructive power of such vapours, we have sufficient proof from what occurs on the coast of Batavia, and the islands that immediately surround it: for if, by judicious treatment, a patient, in this quarter, should become convalescent from an attack of yellow fever, he is still almost certain of falling a prey to the disinvigorating and deliquescent influence of the noisome exhalation by which he is surrounded, and especially between sunset and sunrise, unless timely removed to a more salubrious quarter.

Coast of Batavia.

Discrepancies of symptoms accounted for.

We may hence readily conceive how yellow fever may, under certain circumstances, have a strong tendency to the same asthenic character, and run rapidly into a typhous form, or be combined with its symptoms from the first.

Hybrid fever of authors. Blane, Lempriere, Dickson, Jackson.

This is, in truth, the hybrid disease of Sir Gilbert Blane, Dr. Lempriere, and Dr. Dickson. "In certain seasons," says Dr. Jackson, "in certain situations, and in certain periods of the year, the character of the ENDEMIC is insidious and *malignant*. The disease under those circumstances often begins regularly as a single tertian; and two, and sometimes three revolutions pass over without giving any alarm to ordinary observers: but at one or other of the above periods, a paroxysm commences with coma, stupor, and suspension of functions, threatening immediate destruction: or, as often happens, the energy of action becomes less and less distinct in every succeeding paroxysm;

the skin becomes dry, or damp and greasy, the powers of life are overwhelmed, the pulse contracts itself, or becomes apparently weaker and weaker under the use of bark, wine, and the strongest stimulants of the materia medica*." His second form of the Andalusian fever of 1820, is precisely to the same effect†. Gen. III. Spec. II. } E. malignus asthenicus.

It is to this variety of the endemic of intertropical regions, that Dr. Chisholm has given the name of *malignant pestilential fever*. "It must be kept in mind," says he, "that this, the most tremendous of all the tropical diseases, wherever it appears, is the typhus of Europe, grafted on the yellow remittent fever of the torrid zone, or of countries whose climate, during part of summer and autumn, possesses the temperature of the torrid zone‡."—"It is evident," says he in another place, "that typhous infection does exist, perhaps does originate within the tropics. How fraught with mischief, therefore, is that theoretical notion, that such infection cannot exist, cannot originate, and cannot be propagated in hot climates. Let the young and unexperienced practitioner guard himself against it; and be prepared for it when he meets it§." Malignant pestilential fever of Chisholm.

Dr. Chisholm offers a variety of examples in proof of this assertion, to several of which he had been an eye-witness, especially to that which is so well known to have broken out in the unfortunate attempt to colonize the island of Bulam in the spring of 1793, and which gave rise to the fever of this name, so strikingly characterized by its asthenic signs. He has noticed others also, of nearly equal demonstration, extracted from the reports communicated to the Army Medical Board of our own country. But, perhaps, none offer more striking proofs of this peculiar type than the Edam remittent of 1800, described by Mr. Shields, and that of Trinidad of 1819, described by Dr. M'Cabe‖. In the former of these, the marks of an extreme debility were often peculiarly impressive from the first. The patient, with little previous notice, was seized with giddiness and cold chills, great sense of weakness, Bulam fever. Edam remittent of Shields. Trinidad remittent of M'Cabe.

* Hist. and Cure of Fever, &c., Part I. ch. xi. p. 277.
† Remarks on the Epidemic, &c. on the South Coasts of Spain, 1821.
‡ Climate and Diseases of Tropical Countries, p. 167. Lond. 1822
§ Id. p. 43. ‖ Edin. Med. and Surg. Journ. Oct. 1819.

GEN. III. SPEC. II. 3 E. malignus asthenicus.

pain over the orbits, and in the epigastrium, together with vomiting. He frequently fell down and was insensible during the paroxysm, his body covered with a cold clammy sweat, except the pit of the stomach, which always felt hot to the palm of the hand; the pulse was small and quick; great torpor in the intestinal canal; the pupil dilated and incontractile: great despondency at first, then low delirium or insensibility to danger. The patients, while on the island, were carried off in eighteen, twenty-four, thirty, or forty hours: though often, when removed, not till after as many days. So malignant, indeed, was this pestilence, that "almost every one who slept on the island a single night died." The organs chiefly affected, were first the brain, and in succession the stomach and liver. In the Trinidad remittent, so reduced was the vital energy, that it was found necessary, in various instances, to give the patient three bottles of brandy in less than twenty-four hours, and to continue this proportion for several days.

Medical treatment varies and ought to vary.

The treatment has here varied as much as in yellow fever; in truth it ought to vary—not indeed according to preconceived and general hypotheses, whose only variance consists in fighting general rules against general rules, but in modifying the plan, whatever it may consist in, to the peculiar case.

Bleeding, however, must never form a part of the general practice, how necessary soever it may be in particular instances where atonic congestion may oppress the head or any other large organ. And even in such instances, it will generally be found more expedient to employ calomel in large and repeated doses, than the lancet, unless we see the patient at the very opening of the disease. Under either practice, the bowels must be opened, and kept open by active purgatives; since from the general disturbance of the functionary balance, there is violent action in the abdominal viscera, while the vessels on the surface are entirely torpid. To restore this balance should be our uniform effort: and hence, in conjunction with the above, nothing bids fairer, or has in fact been found more successful, than the use of warm diaphoretics with opium. Cold water as a beverage, or in the form of injection, has also proved a highly refreshing tonic; frequent potations of old hock still more so. The bark is a doubtful remedy, for it often

sits uneasy on the stomach, and is rejected. It has hence fallen into undeserved disrepute. When, however, it harmonizes with the stomach, and is retained without oppression, it is entitled to all the praise that has been bestowed on it by former writers, and cannot be given too freely. The best preparation of it for the present purpose is undoubtedly the sulphate of quinine. Ablution with cold water has been tried very generally during the malignant remittents of most climates, and always with very great advantage*.

GEN. III. SPEC. II. } E. malignus asthenicus.

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## SPECIES III.

## EPANETUS HECTICA.

### *HECTIC FEVER.*

PULSE WEAK: STAGES OF CHILLINESS, HEAT AND SWEAT VARIOUSLY INTERMIXED, AND SOMETIMES SINGLE; COLD STAGE EXHAUSTING; EXACERBATION CHIEFLY IN THE EVENING.

GEN. III. SPEC. III. Peculiarly complex and irregular:

THE symptoms of this species, except in its sweating stages, are far less violent, and consequently its duration is far longer, than that of either of the preceding. Nothing, however, can more fully prove its complexity and irregularity, than the different characters given of it, and the different places allotted to it by different authors. Sauvages and Sagar introduce it into the list of continued fevers: Linnéus, Crichton, and Parr, into the present division, or that of remitting and exacerbating fevers: Boerhaave regards it as of a mixed nature, a continued intermittent. "Febris hectica," says he, "est referenda ad febres continuatas intermittentes." Vogel and Cullen degrade it into a mere symptomatic affection. "As I have never,"

and hence differently arranged by different Nosologists.

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* Epidemia verna quæ Wratislaviam, anno 1737, afflixit. Vide Act. Nat. Curios. tom. x.

GEN. III. SPEC. III. Epanetus hectica.

says the latter, "observed a fever of this kind except when symptomatic, I could not consent to admit it into the list of idiopathic fevers, which alone ought to be enumerated."

By some regarded as merely a symptomatic or secondary disease.

Those who have adopted Dr. Cullen's opinion, have usually contemplated it as a mere effect of absorbed pus. Dr. Heberden seems to think it dependent upon a local cause, but that irritability in any diseased organ, which cannot be brought into a healthy state, will excite it as effectually as pus introduced into the system.

By others as an idiopathic affection.

On the contrary, Galen, Mr. John Hunter, and Dr. Willan contend, that hectic may be, and often is, a strictly idiopathic affection. The second of these valuable writers regards hectic fever as of two sorts, symptomatic and idiopathic *. The first he ascribes entirely to local irritability, and opposes the idea that it is ever produced by absorbed pus. His argument is, that if absorbed pus be capable of producing it in one instance, it ought in every instance: but this we know is not the case; for we have had large buboes and even empyemas removed by absorption suddenly, and yet no hectic has taken place. He does not think that more pus is absorbed during the existence of hectic fever, than when no such fever is present: but, admitting that this should be the case, he would rather ascribe the increased absorption to the hectic constitution operating upon the abscess or sore, than to the abscess or sore operating upon the constitution; in which case the hectic diathesis is the cause, and the increased absorption is only the effect. So that, even here, he regards the hectic as a primary or constitutional disease.

Supposed by J. Hunter to be derived from both sources.

Why not always produced from absorbed pus.

When symptomatic, produced by general irritability.

As a symptomatic affection, however, he refers it to a general irritability of the constitution, produced by sympathy, in consequence of "some incurable local disease of a vital part, or of a common part when of some magnitude;" and which becomes incurable from two causes; firstly, because, though the local irritation is small, the constitution is bad, and does not dispose the parts to a healing state: and, secondly, because, though the constitution is good, the local irritation is so considerable, that it cannot muster up a sufficiency of remedial energy to sub-

* On Blood, part II. chap. ix. sect. 1.

due it; and hence, while sympathizing in the irritable action, falls a prey to its own efforts. GEN. III. SPEC. III. Epanetus hectica.

Yet, says he, it is possible for hectic fever to be an original disease of the constitution; for the constitution may fall into the same mode of action without any local cause whatever, at least that we know of. And in this manner he accounts for its existence as an idiopathic affection. And, in effect, nothing is more common than for hectic fever to exist in patients in whom we can trace no local cause whatever: and, in all such cases, we must either indulge in a gratuitous hypothesis, and throw our suspicions at random upon the lungs, or the liver, or the kidneys, or the heart, or the mesenteric glands, or whatever other organ a few casual symptoms may suggest to the fancy; or we must at least act upon the principle of its being an idiopathic affection, even though we should refuse, in terms, to admit that it is so.

"I willingly subscribe," says Dr. Percival of Dublin, in his manuscript comment upon the author's Nosology, "to idiopathic hectic; and have known it to last three months without any pulmonary affection, and then to break out in the lungs." Idiopathic hectic admitted by Percival.

There seems, indeed, great reason for admitting, with Dr. Stoll, a *habitus phthisicorum* *, a hectic diathesis or temperament; the features of which are for the most part strongly marked, and are to be found in a fair skin, blue eyes, yellow hair, lax fibre, and sanguine disposition. And wherever this exists, it is probable that most of the causes of other fevers, operating upon it, will produce a hectic. And we can hence readily account for the examples cited by different authors of its being produced by diseased actions or affections of the heart, stomach, mesentery, liver, pancreas, lungs, or brain; by a suppression of various exanthems or other eruptions, or of various habitual discharges natural or morbid; by other fevers; by chronic inflammations or abscesses. It is well known to be a common sequel to the measles, occasionally so to the small-pox, and, in a few instances, to rosalia or scarlet fever. It may hence be a result of dyspepsy; and one case is said to have been Habitus phthisicorum of Stoll. Most of the causes of fevers produce it, where this exists; and hence a frequent sequel of various exanthems. Has been produced by dyspepsy.

* Prælect. p. 19.

GEN. III. SPEC. III. Epanetus hectica.

produced by eating bacon, which remained undigested in the stomach for a term of eighteen months, when it was disgorged by sickness, and the hectic symptoms disappeared*. And it is hence possible, that hectic fever may occasionally spring, like other remittents, from febrile miasm.

Probably by febrile miasm.

General character of the disease.

The character of the disease is well given by Mr. John Hunter in the following words: "Hectic may be said to be a slow mode of dissolution; the general symptoms are those of a low or slow fever, attended with weakness, but more with the action of weakness than real weakness; for, upon the removal of the hectic cause, the action of strength is immediately produced, as well as every natural function, however much it was decreased before. The particular symptoms are, debility; a small, quick, and sharp pulse; the blood forsaking the skin; loss of appetite; often rejection of all aliment by the stomach; wasting; a great readiness to be thrown into sweats; sweating spontaneously when in bed; frequently a constitutional purging." —To which he adds, "the water clear." There is, in reality, much difference of opinion upon this last point. Dr. Heberden has observed, that the same irregularity which accompanies most other symptoms of the disease, attends this also; that the urine is equally clear or turbid in the exacerbations and the intervals; sometimes clear in the first and turbid in the second; and sometimes turbid in the first and clear in the second; while Dr. Duncan, from long and assiduous attention, asserts, that the urine is peculiarly distinguished by a natural furfuraceous separation. Such is the character it has usually exhibited in my own practice: though where authorities thus clash, it is not a symptom to be depended upon as a pathognomonic.

Whether pellucid urine be a symptom.

How distinguished from an intermittent.

From the frequent approaches which the hectic makes towards a perfect apyrexy, it is sometimes apt to be confounded with an intermittent; but there is rarely any remission in which the pulse is not at least ten strokes in a minute quicker than it ought to be; and by this it is sufficiently distinguishable, as it is also by the greater irregularity of its different stages, and indeed of all its symptoms.

* Arnold. Diss. de Hecticâ Stomachiâ, 1743.

Gen. III. Spec. III. Epanetus hectica.

It is owing to this last feature that, sometimes, the exacerbation commences with a chilly fit, and sometimes without; and that, where there is a chilly fit, sometimes it is immediately succeeded by heat, but sometimes by perspiration, without any intervening hot fit; while occasionally the cold fit only leads to heat, or even terminates singly without either heat or perspiration. Hence the exacerbations must vary in duration: but even where every stage is present, and succeeds in regular order, the duration of the entire exacerbation is almost equally uncertain, insomuch that it is seldom that three exacerbations of equal length recur in succession. The remissions will sometimes extend to ten or twelve days, without a single intervening pyrectic symptom: and sometimes the cold or the hot fit, or the sweating, will be renewed several times in the same day. Yet, let the perspiration appear whenever it may, the patient is never relieved by it, but is as anxious and restless during its continuance as in the heat or chill.

Stages of the disease irregular in their order.

Exacerbations irregular in their duration.

Sometimes attacks suddenly and violently.

Dr. Heberden* has sometimes seen a hectic attack persons who seemed in tolerable health, in a sudden and violent manner, like a common inflammatory fever: and, like that, in a little time bring them into imminent danger of their lives; after which it has abated, and afforded hopes of recovery. But the hopes have been deceitful; for, the hectic has still been fed by some lurking mischief; and, resisting the power of medicine, has gradually undermined the patient's health and destroyed him.

More commonly slowly and insidiously.

More commonly, however, hectic fever commences slowly and insidiously, and is not suspected for some months: and the only symptoms noticeable are, lassitude upon slight exercise, loss of appetite, and a wasting of the flesh. But if these symptoms be connected with a general increase of pulse, so that the artery beats from ninety to a hundred or a hundred and twenty strokes in a minute, there will be real ground for apprehension.

Remedial process doubtful.

This is one of many diseases, in which the art of medicine has hitherto laboured in vain to strike into any direct tract of cure. The real cause is commonly involved in great and impenetrable obscurity, and we can do little more than attack single symptoms as they make their appearance.

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* Trans. of the College, vol. ii. art. i. p. 6.

GEN. III. SPEC. III. Epanetus hectica.

Where the disease is evidently symptomatic, the case must depend upon curing, or, if incurable, upon removing, when this can be accomplished, the part affected. When idiopathic, we must combat, as far as we are able, the irritable diathesis; and, above all things, endeavour to strengthen, without increasing, the action of the machine.

Irritable diathesis to be combated.

Acids as sedatives and tonics.

The best sedatives as well as tonics are acids, and of these the vegetable will usually be found preferable to the mineral, since, on account of their corrosive property, the latter can only be taken in small quantities. They abate the febrile heat, diminish the restlessness, and frequently succeed in checking the night-sweats. And if, as is often the case, the patient be tormented with pains in the limbs or joints, resembling rheumatism, and preventing him from sleeping, we may combine the acids with opium. The bowels must be kept regular by gentle laxatives, and the neutral salts seem to answer this purpose better than most others. It will, however, be convenient to vary them occasionally, and sometimes to exchange them for the senna confection, or some other aperient.

Occasional aperients.

Myrrh the only stimulant to be ventured upon.

Stimulants rarely answer any good purpose; and in many instances, evidently heighten and accelerate the exacerbation. The Peruvian balsam has been given advantageously with nitre; but myrrh is a medicine of fairer promise; and beyond these we can scarcely ever venture to proceed.

The lighter bitters useful with acids.

The lighter bitters are certainly serviceable in many cases, and may conveniently be employed in combination with the acids; but bark, though tried in numerous instances, and with great perseverance, has not been found successful. Dr. Heberden, however, says, that he never saw it do any harm in the hectic fever, and his opinion is confirmed by that of Sir Edward Hulse, after having prescribed it for forty years. Yet neither of them ever obtained proofs of any beneficial result.

Bark, harmless, but of no avail.

Bath waters where the cause is local.

A light and regular diet, regular hours, and gentle exercise, are coadjutants of great importance. When the disease is dependent upon some local affection, the Bath waters have often afforded relief; but in idiopathic cases, they usually augment the fever, aggravate the patient's sufferings, and hasten his death.

# GENUS IV.

## ENECIA.

## *CONTINUED FEVER.*

ONE SERIES OF INCREASE AND DECREASE; WITH A TENDENCY TO EXACERBATION AND REMISSION, FOR THE MOST PART APPEARING TWICE EVERY TWENTY-FOUR HOURS.

Gen. IV.

Alternated by slight fluxes and refluxes of symptoms.

We now enter upon the important genus of continued fevers, or those which run their course, not indeed without any change or relaxation whatever, as many of them were supposed to do formerly, and were distinguished by the term *continentes*, but with occasional and slight fluxes and refluxes, which bear the same proportions to the exacerbations and remissions of the epanetus, as these do to the paroxysms and intervals of the anetus or intermittent.

Morning and evening often distinguished by fluxes, especially the latter.

When there are two tides or fluxes within the twenty-four hours, the one occurs in the morning, and the other in the evening. The last is always the most distinct; and takes place usually between five and six o'clock, which is somewhat later than the latest of the paroxysms of genuine intermitting fevers; that of the quartan, which is the latest of the whole, usually occurring before five o'clock. It should also be farther observed, that, where continued fever discovers but one augmentation in the twenty-four hours, it is always that of the evening.

Fordyce's natural evening paroxysm.

Dr. Fordyce attempts to show that, even in a state of the firmest health, we constantly discover some tendency to a little febrile affection every evening; this he calls the natural evening paroxysm of fever; and to this habit he ascribes the existence of an evening increase of continued fever.

The genus, thus defined and characterized, includes the three following species:

1. ENECIA CAUMA. INFLAMMATORY FEVER.
2. ——— TYPHUS. TYPHOUS FEVER.
3. ——— SYNOCHUS. SYNOCHAL FEVER.

GEN. IV. Enecia.

Sauvages's line of distinction between the different species of continued fever.

Holds only generally.

Sauvages draws a line of distinction between these three from their respective duration, as well as from their more essential symptoms, affirming that the cauma terminates in a week at the farthest; the typhus in two, though sometimes protracted to three weeks; while the synochus reaches beyond the second, and often beyond the third week. As a general rule, this remark is worth keeping in mind; but, the deviations from it in all the species, are too frequent to enable us to lay hold of it in assigning their specific character.

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## SPECIES I.

## ENECIA CAUMA.

### *INFLAMMATORY FEVER.*

HEAT GREATLY INCREASED; PULSE QUICK, HARD, AND STRONG; URINE RED; DISTURBANCE OF THE MIND SLIGHT.

GEN. IV. SPEC. I. Distinguished by various names,

of which the worst is synocha.

THIS species has been distinguished by a variety of names by different nosologists and other medical writers; the chief of which are, *imputrid synochus*, which is that of Galen; *imputrid continued fever*, which is that of Boerhaave; *imputrid continent*, which is that of Lommius; *sanguineous continued fever*, which is that of Hoffman; and *synocha*, which is that of Sauvages, Linnéus, Cullen, and most writers of the present day. Of these, synocha, for reasons stated in the comment to the Nosological Synopsis, is the worst; it has no clear or correct etymological meaning; it has been used in different senses by different writers, and approaches so nearly to synochus, used as extensively by most of the same writers, as to create a perpetual confusion in the minds of young students; and the more so, as the disease before us is expressly denominated synochus by Vogel, whilst most writers employ this term to import a different species of fever. On all which ac-

counts, I have judged it right to exchange synocha for cauma, a term already employed for the same purpose by Dr. Young, and which, derived from καίω, "uro," is etymologically significant of the character of the disease it designates. The common English term *inflammatory fever* is excellent; and is, in truth, a direct translation of the Greek term cauma. Dr. Fordyce denominates it *general inflammation:* by which he clearly intimates, that this species of fever bears a near resemblance to the symptomatic fever produced by the local affections called phlegmasiæ, or phlogotica, which constitute the next order of the present class, to which the term *inflammations* is now commonly limited; but which Dr. Fordyce would distinguish by the term "*local inflammations.*"

GEN. IV. SPEC. I. Enecia cauma.

And hence exchanged above for cauma.

Importing general inflammation.

Fordyce's name for it.

In effect, inflammatory fever and the fever of inflammations bear the same relations to each other, as the idiopathic and symptomatic hectic: in both, there may be a general or a local remote cause; but, the influence upon the constitution will be the same, whatever be the source of excitement. It has been doubted, however, whether cauma or inflammatory fever ever exists without a local cause; and Dr. Cullen, who does not allow that hectic fever is ever found without a local cause, distinctly affirms, that he has never seen inflammatory fever existing under the same circumstances: whence Dr. Clarke, of Newcastle-upon-Tyne, who has too much generalized the subject, has struck inflammatory fever entirely out of the list of diseases, contending, that even the term inflammatory ought never to be applied to fever, excepting when fever itself only exists as a concomitant of some local affection*: while Dr. Clutterbuck, as we have already observed, has contended, that this local cause is at all times, and under every variety of fever, an inflammation of the brain. If, however, a cause of this kind be ever fairly made out, a variety of facts, of late detection, will be far more likely to fix it in an inflammation of the arteries, the ARTERITIS of the French writers, who have recently examined the subject at considerable length, especially MM. Portal†, Dalbant, and

Difference between inflammatory fever and fever of inflammations.

Whether it exists, except from a local cause.

Local cause various in its seat, as contemplated by different supporters of this doctrine.

Arteritis, what.

* Observations on Fevers, &c. 8vo. London, 1779.

† Cours d'Anatomie Medic. tom. iii. p. 127. 1804.

GEN. IV. SPEC. I. Enecia cauma.

Vaidy *; and to which Dr. Frank has, indeed, already ascribed inflammatory fever in one of its forms†. But the subject is still involved in great obscurity, as it is doubtful whether the change of arterial structure, which has been found after death in many cases of supposed arteritis, has been really an effect of inflammatory action. In acute rheumatism, it is probably a frequent cause or concomitant; but this is a question we shall have occasion to return to under that disease. How far either hectic or inflammatory fever may, under particular circumstances of human or atmospherical constitutions, occasionally originate from marsh or contagious miasm, it is difficult to determine; but as Dr. Cullen was peculiarly desirous of reducing all fevers to these two sources; and as, to say the least, they are not obvious sources of either of the diseases in question, his mind appears to have received some bias from this fact in rejecting them from the list of idiopathic fevers. And as it has already been shown, that this decision has laid a foundation for much of that "tug of war" in which many distinguished members of the profession have of late years been engaged, respecting the nature and treatment of particular species of fever, it is highly probable, also, that several of the more recent hypotheses, concerning its proximate cause, have originated from the same spring.

History of symptoms.

Inflammatory fever, as it has often occurred in the author's own practice, and in that of others who have described it, usually commences with the symptoms of an acute ephemera, and may in fact be contemplated as the same disease running on from four or five to about eleven days, without intermission, or a renewal of the cold fit. It commences with a sense of languor and inaptitude for exertion, with a disrelish for food, which continues for a day, or perhaps two. There is then chilliness and soreness over the surface, with nausea and head-ache, succeeded in the evening by a great increase of heat, and at night by perspiration, with great thirst, restlessness, and sometimes delirium; sometimes, in young persons, convulsions with a

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* Dict. des Sciences Médicales: Journ. Complement. vi. Août, 1819.

† De Curandis Hominum Morbis Epitome. Lib. i. § 118. 8vo. Manheim. 1791.

stupid drowsiness. The bowels are usually costive, the urine high coloured, and the pulse quick and hard. GEN. IV. SPEC. I. Enecia cauma.

With Dr. Fordyce, the grand pathognomonic symptom of cauma is hardness of the pulse. This accompanies it from first to last, in its simplest and in its severest state. When the disease is mild, it is hard alone; when more violent, it is at the same time full, strong, and frequent. The obstructed pulse is often confounded with the hard, and it is not easy to distinguish them without considerable practice. There is rigidity of resistance to the finger in each, but of a different kind. In the hard pulse, it is much firmer and tenser; and is supposed by Dr. Fordyce to result from such an increase of arterial contraction as to overbalance its correspondent dilatation. It indicates, in his opinion, a very high degree of living power, and is peculiarly characterized by a tardy coagulation of the blood when drawn freely into an hemispheric basin, in consequence of which the red particles have time to subside, and leave the surface colourless, or with a buffy appearance. In the obstructed pulse, on the contrary, the blood coagulates at once; and, the red particles not having time to separate, the surface is of the same hue as the cake below.

Pathognomonic symptom, hardness of the pulse.

Hardness of the pulse described and explained.

How differs from obstructed pulse.

The disease sometimes terminates abruptly with a critical sweat, or some other evacuation, on the fourth or fifth day: but more usually increases in violence, though with occasional declinations, for a week longer; during which time the pulse rises to a hundred, or a hundred and ten strokes in a minute, but continues regular; the nausea subsides, and the patient will take and retain whatever is offered to him of simple nutriment or medicine: the thirst is less violent, but the tongue is deeply furred, and the lips are parched.

Progress of cauma.

The disease is not often dangerous; and about the eleventh day gradually subsides, or yields to some critical discharge, which is usually that of a free and alleviating perspiration. The pulse soon sinks to eighty, and the chief symptom is weakness.

Termination.

During the course of the fever, every organ suffers from its morbid and increasing impetus; but they do not all suffer alike: for in some parts there is, occasionally, a greater resistance to the flow of the circulating fluid than in others, whence that acute pain, which is often complained of in

Different organs differently affected.

GEN. IV. SPEC. I. Enecia cauma.

the head or the side: in the latter case, sometimes amounting to pleuralgia. And, not unfrequently, the vessels of one part will give way more readily than those of another, and there will be a sense of heaviness and oppression in the head, the heart, or the lungs; as though some effusion had taken place, which, in some instances, is perhaps actually the case. If the head be much affected, delirium is a frequent result, with ravings and violence, rather than the low muttering incoherence of asthenic fevers.

May sometimes, perhaps, arise from febrile miasm;

From the history, already given of the malignant causus, or ardent malignant remittent, it appears probable, that inflammatory fever may sometimes be produced from febrile miasm, though it is commonly derived from other sources.

but more frequently from violent passion, exercise, or heating foods;

Of these, the stimulus of violent passions is, perhaps, one of the most common; and especially upon a vigorous and plethoric habit, which is the usual temperament in which inflammatory fever makes its appearance. Undue muscular exercise, heating foods, or excesses of any kind in the same habit, are also frequent causes; while another

suppression of accustomed discharges, or sudden perspiration.

may be found in the suppression of any accustomed discharge, as that of menstruation, epistaxis, or periodical blood-letting. Suddenly suppressed perspiration is, in like manner, a frequent, perhaps the most frequent cause of any; especially when the body is very hot, and the change is effected by exposure to a temperature of great cold, applied externally or internally, as that of a current of cold air, a large draught of cold water, or plunging into a river.

Whether by a resorption of bile.

Some writers, as Sennert and Crichton, have supposed inflammatory fever to be occasionally produced by an absorption of bile into the blood-vessels under the excitement of a tropical sun, or of a torrid summer in milder regions; and they suppose that the bile is, in this case, possessed of a more than ordinary degree of acrimony, and that the symptoms are varied by a more pungent heat and more intolerable thirst, with a more scanty secretion of urine, preternaturally acrid and high-coloured.

Inflammatory fever a frequent concomitant of resorbed bile,

That bile of this description is often forced back into the system under the circumstances here supposed, is unquestionable; as it is also that inflammatory fever is a frequent accompaniment of this morbid change. But, notwithstanding the above authorities, such fever seems

less attributable to the reflux of bile into the blood, than to the insolation or solar excitement; which, by unduly stimulating the liver, has been the cause of an overflow of the bilious secretion. How far a more irritant or exalted acrimony may be communicated to bile thus operated upon, or what may be its effect upon the system, admitting it to take place, it is difficult to determine; but there is much reason to doubt whether genuine bile in the sanguiferous system is ever a cause of fever, or stimulates the heart or arteries to increased action. For if this were the case, jaundice would always be accompanied with inflammatory fever. Instead of which, however, we find it accompanied with atony instead of entony, or diminished, instead of increased power.

GEN. IV. SPEC. I. Enecia cauma.

but perhaps never produced by it.

Sauvages gives a case, in which inflammatory fever was produced by a mechanical irritation of the meninges of the brain, by a lodgment of vermicles in the frontal sinus, of which seventy-two were discharged during a fit of vomiting and sneezing, from which time the patient began to recover.

Produced by vermicles in the frontal sinus.

These vermicles were most probably the larvæ of some species of the œstrus or gad-fly, which had crept up into the frontal sinus, after being hatched in the nostrils in which the parent insect had deposited her minute eggs. This is a very common affection in grazing quadrupeds, and especially in sheep, which are often peculiarly tormented, and sometimes driven almost mad by the violence of the irritation.

Stoll gives a case in which the brain, on examination after death, was found deluged with serum—diluvium serosum *. But such an appearance is rather to be regarded as an effect, than a cause of the disease; as an instance of *cephalitis profunda*, in consequence of the brain having suffered more, than any other organ from the inflammatory impetus.

Hence the following varieties are noticeable under the present species:

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|---|---|
| α Plethoricum. Plethoric inflammatory fever. | Produced in a plethoric habit by great mental or muscular excitement, or heating foods; or by a sudden suppression of |

* Mat. Med. III. p. 294.

GEN. IV. SPEC. I. Enecia cauma.

the head or the side: in the latter case, sometimes amounting to pleuralgia. And, not unfrequently, the vessels of one part will give way more readily than those of another, and there will be a sense of heaviness and oppression in the head, the heart, or the lungs; as though some effusion had taken place, which, in some instances, is perhaps actually the case. If the head be much affected, delirium is a frequent result, with ravings and violence, rather than the low muttering incoherence of asthenic fevers.

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GEN. IV. SPEC. I. Enecia cauma.

perspiration, or of other accustomed discharges.

β Biliosum. Bilious inflammatory fever. — Accompanied with an excessive secretion of bile, absorbed into the sanguineous system.

γ Pleuriticum. Pleuritic inflammatory fever. — Accompanied with a violent stitch or pain in the side.

δ Cephalalgicum. Cephalalgic inflammatory fever. — Accompanied with acute pain in the head.

Remedial process. Venesection. Cathartics. Relaxants. Crystallized acetate of ammonia.

As an inflammatory diathesis constitutes the essence of this fever, the cure must depend altogether upon a reduction of the vascular, and especially of the arterial entony: always bearing in mind the possibility, that the disease may suddenly lose its inflammatory character, and rapidly pass into that of a typhus. Regulated by this view, we should generally commence with bleeding and cooling purgatives. There are a few cases, indeed, in which bleeding may be dispensed with, as when the habit is by no means plethoric, and the pulse is obstructed rather than hard; but these are cases that rarely occur. Diaphoretics, or relaxants as they are denominated by Dr. Fordyce, may then be employed with advantage. Of these the tartarized antimony, the antimonial powder, or James's powder, are chiefly to be relied upon; and may be given alone, or, which is often better, in saline draughts; and particularly those formed of the acetate of ammonia. And it may not be amiss to observe here, that the acetate of ammonia is sometimes prepared in the form of crystals, and sits more easily on the stomach in this, than in any other shape. When given as a liquid, it is of importance, that the solution should retain the carbonic acid gas of ammonia as largely as possible; and, for this purpose, the union should take place in a strong close vessel. According to Bergman, nearly half the weight of ammonia depends upon the quantity of this gas which it contains; so that in a pint of the solution of the acetate of ammonia, comprising four drachms of the latter, there will be extricated, if made in the manner here recommended, little less than a hundred and sixty cubic inches of air.

Gen. IV. Spec. I. Enecia cauma.

As the stomach is for the most part but little affected, emetics, if used at all, can only be employed for the purpose of determining to the surface; but, as we can do this by the antimonial and other diaphoretics just referred to, as also by diluent drinks, it is hardly worth while to irritate the stomach in order to accomplish the same purpose. Perfect rest of body and mind, a reclined position, and a light liquid diet, destitute of all stimulants, are also indispensable toward recovery. The air should by all means be kept pure, by being constantly renewed, though without a sensible current; the temperature cool; the clothing light, and as often changed as may be necessary to maintain cleanliness; and the beverage, toast-water, lemonade, or cool tea; which last Professor Frank recommends to be made with cold instead of with boiling water, "Infusum chinæ cum frigidâ paratum*."

Treatment. Emetics, how far useful.

Other remedies.

Tea made with cold water.

Inflammatory fever less common than formerly;

After all, however, it is not often that examples of pure inflammatory fever are to be met with in the present day; and it is contended by very high authorities, and seems to be established by the medical records of earlier times, compared with those of our own, that it is a disease far less common now than it was formerly; and that it is seldom, to adopt the words of Mr. J. Hunter, "that physicians are obliged to have recourse to the lancet, at least to that excess which is described by authors in former times. They are, now, more obliged," continues the same writer, "to have recourse to cordials, than evacuations; and, indeed, the diseases called the putrid fever and putrid sore throat are but of late date. I remember when the last was called Fothergill's sore throat, because he first published upon it, and altered the mode of practice. I remember when practitioners uniformly bled in putrid fevers; but signs of debility and want of success made them alter their practice. Whether the same difference takes place in inflammation, I do not know, but I suspect that it does in some degree; for I am inclined to believe that fever and inflammation are very nearly allied, and that we have much less occasion for evacuations in inflammation, than formerly; the lancet, therefore, in inflammation, and also purgatives, are much more laid aside†."

As conjectured by Mr. Hunter.

* Ut suprà, tom. i. p. 197.

† On Blood, &c. Part II. p. 227.

GEN. IV. SPEC. I. Enecia cauma. Treatment. Whether owing to a change in the common mode of life.

It is not easy to account for this change in the national temperament. It is common, indeed, to ascribe it to an alteration in our mode of life, which is asserted to be much fuller than that of our forefathers. "We may be said," says Mr. Hunter, "to live above par. At the full stretch of living, therefore, when disease attacks us, our powers cannot be excited further, and we sink so as to require being supported and kept up to that mode of life, to which we have been accustomed."

The habits of the day do not answer to his description.

If this be a correct view of the times in Mr. Hunter's day, they have greatly altered and improved within less than half a century: for there has never been a period, since wines and fermented liquors have been introduced among us, so temperate and sober as the present. Drunkenness, which was formerly common in our streets, is now rarely met with; suppers are almost entirely relinquished; and instead of its being disgraceful, as was the case in 'the olden time,' for the master of the house to let his guests leave him either sad or sober, nothing is now so disgraceful as intoxication. It is true, we are got back again to a very free use of the lancet in many instances; which would seem to show, that we had completed a revolution in our general temperament, as well as our general temperance; but it is not a little singular, that, while the lancet is still used with comparative caution in inflammatory fever, it is chiefly employed, and often unsparingly, in typhus or putrid fever. And hence, there is more reason, I fear, for suspecting a revolution in the professional fashion, than in national temperament; and that the bold and the timid plans have been alternately introduced, and alternately dropped, not so much from any radical change in the constitution, as from their being found to fail, because employed as popular means, or under the influence of some favourite hypothesis on all occasions, without a due degree of clinical discrimination, or attention to the habits or symptoms of individuals at their bed-side.

## SPECIES II.

## TYPHUS.

### *TYPHUS FEVER.*

PULSE SMALL, WEAK, AND UNEQUAL; USUALLY FREQUENT; HEAT NEARLY NATURAL; GREAT SENSORIAL DEBILITY, AND DISTURBANCE OF THE MENTAL POWERS.

GEN. IV. SPEC. II.

Specific term derived from Hippocrates, and peculiarly expressive of the disease.

THE term is derived from Hippocrates, who uses it, however, in a sense not exactly parallel with its application in modern times, but rather in reference to that low, muttering, and stupid delirium, which so frequently accompanies the disease. It is, nevertheless, admirably expressive of the general nature of the fever to which it was applied at first, and which it designates at present; which burns, not with open violence as the cauma, but with a sort of concealed and smothered flame; for the Greek term τύφω signifies "to smoulder," or "to burn and smoke without vent."

May originate from the ordinary causes of fever.

Any of the ordinary causes of fever may be a cause of typhus; for, the typhoid form is often dependent upon the character of the constitution into which it is received, as evincing a great deficiency of sensorial power: and hence cold, mental agitation, excess of muscular labour, and even intemperance, which, in a high entonic habit, might generate synocha or inflammatory fever, will often in a debilitated constitution, and especially when the debility depends primarily upon the state of the nervous system, and the nervous influence is recruited with difficulty, give a typhous complexion to the disease from the first.

But arises generally from human effluvium, under the influence of auxiliary powers.

But, though all the causes of fever may in this way give rise to typhus, its common cause, as we had occasion to notice when treating of the remote causes of fever*, is febrile miasm, issuing from the decomposition of human effluvium, under the influence of the ordinary auxiliaries of

* Suprà, Cl. 1. Ord. 1.

GEN. IV. SPEC. II. Typhus.

a close and stagnant atmosphere; still farther corrupted by a load of foreign exhalations from dirt or filth of any kind, and of that degree of warmth and moisture which must always exist where society exists, and especially where it exists in too crowded a state. Under these general circumstances, a very low degree of warmth and moisture is sufficient, though there must be some proportion of both. And provided there be an adequacy of warmth, the lower the temperature, the more certainly an individual becomes affected; not from a more abundant generation of febrile miasm, or from its being more volatile—for, on the contrary, it is here perhaps less abundant, and even less volatile—but from the more depressed state of the living power, and the less resistance it is capable of offering to any morbid influence whatever.

Miasm thus generated has a specific power of lowering the vital energy.

I have just remarked, that, under a depressed state of the living power, whatever be its cause, whether a want of cheerful warmth, cheerful passions, cheerful food, or cheerful and regular habits, typhus is often more likely to take place, than any other species of fever. But when febrile miasm, produced by a decomposition of effluvium from the living body, exists in co-operation with these, it is almost impossible for an individual to escape; as the miasm thus generated has a specific power—a power beyond all other febrile causes whatever—of lowering still farther the vital energy as soon as it is received into the system, and thus of confirming the previous tendency to this peculiar type.

In what way typhus becomes contagious.

All this indeed has been observed already, though it is necessary to revert to it on the present occasion: it has also been farther observed that, when a typhus has, in this or any other manner, once arisen, the effluvium from the living body during its action is loaded with miasm of the same kind, completely elaborated as it passes off, and standing in no need of the decomposition of the effluvium for its formation. In many cases, indeed, all the secretions are alike contaminated; and, hence, febrile miasm is often absorbed, in dissection, by an accidental wound on the hand, and excites its specific influence on the body of the anatomist; for in this way, also, typhus has been produced.

Hence, typhus becomes infectious; but as the miasm it generates, though more suppressive or exhaustive of

sensorial energy, is less volatile, than that of marsh-lands or dead organized matter, its infectious power is confined to a much more limited atmosphere, than that of fevers arising from this latter source. And on this account, fevers originating in jails, or other confined and crowded scenes, are less extensively communicable, than the yellow fever, or that of hot climates and exhaling swamps.

The contagion more limited in its range than marsh-miasm.

It may be also necessary to remind the reader of another remark already made, that, in a pure atmosphere, the miasmic materials, from whatever source derived, become dissolved or decomposed; but slowly and with great difficulty, perhaps not at all, in a vitiated atmosphere, already saturated with foreign corpuscles. In a state thus crowded, moreover, they less readily disperse or ascend beyond their proper periphery of action; and where they are less volatile, as when issuing from human effluvium, they perhaps adhere by a peculiar tenacity to bodies more ponderous than themselves, and thus loiter for a still longer period within the stratum of human intercourse. And hence, the fouler as well as the more stagnant the atmosphere, the more general, and, from the former cause, the more malignant, the disease; for, as nothing is so contributory to the preservation of sound health as pure air, so nothing tends so much as foul air to prolong or aggravate diseases of every kind. And hence, again, we have an obvious and sufficient reason, why typhus should become more severe in proportion as it spreads and impregnates a given space with its specific miasm and accompanying colluvies.

Becomes dissolved in a pure atmosphere, but often not at all in a vitiated.

Why more malignant in vitiated air.

To what extent febrile miasm, issuing from the source before us, may spread in a free influx of pure air without becoming dissolved, or, in other words, so as to retain its contagious power, has never been very accurately ascertained. We know, however, that its range is very circumscribed, and reaches to but a very small distance from the patient, or the nidus of foul clothes or utensils in which it may be lodged; and never infects a person in an adjoining street, or house, or room in the same house; nor even, as Dr. Haygarth has observed, in the patient's own chamber, if large, airy, and kept clean: a remark that has since been confirmed by Dr. Baillie. "With respect," says he, "to the contagious nature of these fevers I am convinced, that it is in general not considerable. I do not

Its contagious range not fully ascertained, though known to be very circumscribed.

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recollect an instance in which a patient in that hospital (St. George's) communicated the infection to a patient lying in the next bed. When patients are crowded together, and the apartments are ill-ventilated, I entertain no doubt of this species of fever being capable of being communicated from one individual to another*." [Dr. Alison, in his description of the epidemic fever of Edinburgh in 1827, likewise particularly mentions, that, in the men's ward of the hospital, there was no instance of any patient, admitted on account of other complaints taking fever in the house, notwithstanding its continued presence on the opposite side of the ward. In the women's ward, however, two or three patients, admitted on account of other complaints, took fever. Notwithstanding what happened in the men's ward, this intelligent physician adduces many convincing facts, in support of the doctrine, that fever spreads not from malaria, but from contagion communicated by intercourse between the healthy and the sick†.]

Does not render clean clothes contagious, but unquestionably unclean.

It is also of great importance to know, that typhous miasm, like the specific miasms of exanthems, does not render clean clothes of any kind contagious; or, in other words, does not adhere to, or harbour in them. When, however, they are not clean, they may unquestionably be rendered contagious; and, hence, it is probable, that the animal filth, with which they are impregnated, while it is a source of additional miasm, becomes a fomes of that already formed, and separated from the patient's body.

All individuals do not equally receive the contagion.

A susceptibility, however, to diseases of every kind varies considerably in different individuals; and hence many persons upon an equal exposure to typhous contagion with others, receive it far less readily, and, in some cases, seem to be almost favoured with a natural immunity. As we have already remarked, that a peculiar state of body gives a peculiar tendency both to generate and receive typhus, we can easily conceive that, where the body is in an opposite state, it must be much less susceptible of its influence; and we are thus put in possession of a general cause of escape. But there seems to be something beyond this,

* Lectures and Observations on Medicine. 1825. Unpublished.

† Alison, in Edin. Med. and Surg. Journ. No. 93, p. 234, et seq.

dependent, indeed, not upon the incidents of more vigorous health, or higher animal spirits, but upon the nature of the idiosyncrasy itself.

What proportion of individuals are naturally exempt from its influence.

Dr. Haygarth has endeavoured to determine, from very ingenious and plausible data, the average proportion of those who in this manner remain exempt from contagion, while spreading on every side around them. And he limits the immunity to one in twenty-three: for he tells us, that when one hundred and eighty-eight men, women, and children, were exposed fully to the typhous contagion for days and nights together, in small, close, and dirty rooms, all of them, except eight, were infected with this fever *.

Miasm continues latent in the body seven days, and sometimes much longer.

And he has farther endeavoured to show, that the miasmic poison, when received into the body, continues in a latent state for seven days, from the time of exposure to the contagion, before the fever commences, and may continue in the same state for seventy-two days, beyond which we have no instance of its producing any effect. And this deduction is in pretty close unison with the experience of Dr. Bancroft †, who, in ninety-nine cases of orderlies and nurses that attended the English army, on its arrival at Plymouth from Corunna in 1809, observed, that they were rarely attacked with fever earlier than the thirteenth, and, in no instance, later than the sixty-eighth day. [In numerous instances, however, brought forward by Dr. Marsh ‡, the latent period of typhus, or the interval between the receipt of the contagion and the beginning of the symptoms, was a very short period; and the infection taken so instantaneously, as it were, that doubts arose, whether the contagion had had time to operate through the medium of the absorbents.]

Latent stage often very short.

Man may be brought by habit to bear exposure harmlessly.

Man is so much the creature of habit, that his constitution is in a thousand instances brought by degrees to endure poisons of the most fatal power. This we see daily in the use of opium and ardent spirits; and we shall in due time have to notice something of the same kind even in plague. This adaptation of the constitution, however, to the circumstances by which it is surrounded, is in nothing more

* Letter to Dr. Percival, p. 31.

† Essay on Yellow and Typhus Fevers, p. 515.

‡ See Marsh on the Origin of Fever. Dublin Hospital Reports, vol. iv. p. 456, &c.

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conspicuous, than in the fever before us. Not, indeed, in all persons—for all do not possess the same pliability of constitution—but in those who are endowed with it. And, hence, one reason why nurses and perhaps hospital-surgeons escape so often without injury; and especially why prisoners, brought into a court for trial, remain themselves occasionally in perfect health, while their clothes are so impregnated with the contagious miasm as to infect a whole court, and communicate the disease to the judge or others who are at the greatest distance from them; of which we are furnished with melancholy examples in the Oxford assizes of 1577, those at Exeter and Taunton in 1586, those of the Old Bailey in 1736 and 1750; besides similar instances in various hospitals and ships of war.

But not all persons equally.

Examples.

Some more slightly affected than others;

There are other persons again, as Sir George Pringle has well observed, whose constitutions, forming a middle line between those who readily receive, and who powerfully resist the contagious aura, are affected only in a modified degree. They bend to the assault, but are not cut down by it. They become feeble and irritable; the sleep is disturbed; the tongue white in the morning; the appetite impaired; the smallest exertion fatigues them, and accelerates the pulse; and, in this state, they remain for weeks together, and at length recover without any formal attack of fever.

in yellow fever as well as in typhus.

We have seen, that the same influence of habit exists under yellow fever; during which the natives of those climates, where its remote causes are in almost perpetual operation, suffer far less when it attacks them, and are far less susceptible of its attack.

Typhus sometimes produced from swamps,

and then occasionally epidemic.

But though febrile miasm, issuing from a decomposition of human effluvium, has a peculiar tendency to generate typhus, we have seen, that the same miasm issuing from a marsh effluvium, or a decomposition of dead organized matter, under a peculiar state of modification, has produced remittents with a typhous character, and sometimes specific typhus itself*. And as, in this case, the miasm is apt to spread more widely, typhus has by many writers been said to be occasionally epidemic. When, however, the disease

* Epanetus malignus asthenicus, suprà, Cl. III. Ord. I. Gen. III. Spec. II. 3.

issues from this source, it is far more generally in temperatures too low, than too high and heated; since, as already observed, cold, and especially cold and moisture, have a peculiar tendency to depress the living power: and hence this disease is said to be almost stationary at Carlscrone, or at least to have lingered there for four or five years on some occasions*. Gen. IV. Spec. II. Typhus. Occurs chiefly in low temperatures.

[The opinion, that the type of fever has not an exclusive connexion with its cause, and that it depends much upon atmospheric influence, or constitutional diathesis, is ably supported by Dr. Marsh†, who cites several cases, in which exposure to typhoid contagion occasioned intermittent and remittent fever; and to puerperal infection, typhus.]

Typhus, therefore, originating from different causes, and all these causes modified in their action by collateral circumstances, may readily be supposed to be accompanied with very different symptoms, and to appear under very different degrees of severity. The chief varieties, however, are the two following:

| | |
|---|---|
| α Mitior. | Nervous fever. |
| β Gravior. | Putrid fever. |

The FIRST VARIETY, or MILD TYPHUS, was called by Dr. Huxham *febris lenta nervosa*, and has hence been commonly distinguished by the name of low or slow NERVOUS FEVER, from the great languor and dejection of mental or sensorial power with which it is always accompanied, and, on this account, it has sometimes been denominated *hysterical fever*‡. It is particularly characterized by slight shiverings; heavy vertiginous head-ache; oppression at the præcordia; nausea; sighing; despondency; coma, or quiet delirium; whey-like urine. α. Typhus mitior. Character.

When the disease appears sporadically, it is usually under this form. There is nothing alarming to the patient's friends on its accession. The first symptoms are slight, the tongue exhibits little change, and the pulse is only a Sporadic typhus generally under this form.

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* Foxe, Neuen Schwed. Abhandl. Band. viii.

† See Dublin Hospital Reports, vol. iv. p. 519, et seq.

‡ Manningham on the Symptoms, Nature, and Cure of the Febricula, commonly called the Nervous or Hysterical Fever. Lond. 1776.

GEN. IV. SPEC. II. α E. Typhus mitior.

Progress of the disease.

little quickened, and somewhat smaller than usual: at the same time, however, there is great anxiety and depression of mind; so that the symptoms do not much differ from a mild and comparatively insignificant fever of any kind, operating upon a nervous temperament. But as the disease advances, all the symptoms of sensorial debility become severer; the skin, which has hitherto been mostly dry, will about the third day be covered with profuse, clammy, debilitating sweats, while the heat is still inconsiderable, and the countenance pale and sunk. The sweat is often offensive to the smell, frequently acid, and sometimes, according to Stoll, as sour as the sharpest vinegar*. About the tenth day, the weakness greatly increases; all the limbs tremble; and the tremors soon become convulsive, with a despondency and alienation of mind, at first observable only in the night, but soon continuing with little intermission: the delirium is of the mild or quiet sort, and rarely amounts to phrensy.

Rarely marked by a crisis.

Termination.

The disease often runs on to the twenty-first day, and occasionally to a much longer period. It is seldom marked by that sudden change which can be called a crisis; but gradually becomes more aggravated in its symptoms, till it reaches a fatal termination; or slowly advances to convalescence, by evincing a disposition to natural sleep; more steadiness and firmness of pulse; a more favourable countenance; a tongue more florid at the edges; a firmer and more collected mind; and a returning desire for food, often indeed capricious, but without nausea or sickness.

Singular case of typhus.

In an anomalous and very singular case, related by Dr. Satterley†, the desire for food, which at first was greatly loathed in whatever form offered, re-appeared about the fifth day with an enormous craving, which it was impossible to satisfy. Animal food was preferred, but food of any kind was swallowed voraciously; and when food was not allowed, various indigestible substances were devoured in its stead. This desire returned with every returning ingravescence of the fever, which adhered to no regular period; and it continued as long as the ingravescence lasted, which was usually ten or twelve hours. The disease extended with numerous variations to upwards of thirty

* Rat. Med. III. p. 79. † Med. Trans. vol. v. art. xxii.

days, when the fever unequivocally subsided, and the patient gradually recovered. GEN. IV. SPEC. II. α E. Typhus mitior.

Of the treatment we shall speak, after considering it in its severer forms.

The heavier, severer, or PUTRID TYPHUS chiefly differs from the mild in the violence and rapidity of its march, and the marked and undisguised character it assumes from the first. While the mild therefore commences insidiously with only slight shiverings, the heat scarcely above the natural temperature, and the pulse small, and only a little quickened, the heavy typhus opens with sensible and alternating rigor and heat, succeeded by little or no perspiration; the pulse is tense and hard, usually quick but fluttering; with pain over the forehead and crown; urine alternating from limpid to turbid; delirium succeeded by stupor; purple dots or patches, and other early signs of putrescency. β E. Typhus gravior. How differs from mild typhus, or nervous fever.

From the last feature, the disease has derived its common name of PUTRID FEVER; as it possesses the additional names of JAIL, CAMP, and HOSPITAL FEVER, from its appearing so frequently in these situations: while, from the purple or flea-bite spots, which last are often called petechiæ, or as it should rather be written petecchiæ, this variety has been very generally treated of at home, under the name of SPOTTED FEVER, and on the continent under that of *febris petechialis*, or *petechizans;* sometimes, as by Follini* and Matarasius†, under that of *febris peticularis;* sometimes, as by Jacobi and Morelli‡, that of *febris purpurata;* while by A Castro it is termed *febris punctularis*§; and by De Cermona, *febris cum punctulis* ‖. By the Spaniards, it was hence vulgarly denominated tavardillo or tabardillo, from tavardo, a spotted cloak formerly in common use. It is a termination very common in various parts of America. These punctæ or vibices, however, are nothing more than symptoms of putrescency; and are common to other fevers, and even to diseases without fever, as land Called also jail, camp, and hospital fever. Spotted fever. Petecchial or punctular fever.

* Orationes de Naturâ Febris Peticularis. Colon. 1722. 8vo.
† De Febribus peticularibus malignis, contagiosis, &c. Mezarini, 1722. 8vo.
‡ De Febre purpuratâ epidemicâ. Lion. 1641. 8vo.
§ Febris maligna punctularis aphorismis delineata. Tub. 1693.
‖ Tract. de Peste et Febribus cum punctulis. Sevilla, 1581. 8vo.

GEN. IV. SPEC. II. β E. Typhus gravior.

or sea scurvy (*porphyra hæmorrhagica* and *p. nautica*) as well; and hence have no ground whatever for establishing a distinct species, and still less a distinct genus, though they might perhaps form a variety. By most writers therefore of eminence, from Cullen to Swediaur, they are arranged and treated of as different forms of the same disease.

Diagnostics.

During the first twenty-four hours, the alternate heat and cold are considerable; the fever increases every evening, and, in the second week, the delirium usually commences; the stupor following five, six, or seven days afterwards. From the first, there is a heavy and vertiginous head-ache and vomiting: the pain over the forehead shoots through the eyes to the bottom of the orbits; the eyes themselves are full, heavy, and slightly inflamed; the countenance is bloated; the tongue white rather than furred; the temporal arteries throb, while the pulse at the wrist is small and oppressed; the ears tingle; and the mind, antecedently to the delirium, is fearfully dejected. There is also occasionally from the weak degree of action on the surface, a livid but interrupted turgescence over the whole of the body as well as the face, not unlike the mottled appearance on the skin of a healthy person when exposed to a slight degree of cold. Dr. Hildenbrand has regarded this symptom as constant and pathognomonic; and has hence introduced contagious typhus into the list of exanthems, specifically distinguished by this spotted efflorescence*, which he seems further to believe is loaded with its peculiar miasm. So far, however, as the present author has seen, it is an occasional, rather than a necessary accompaniment, and appears to be a natural result of the cause just stated. It subsides in a few days.

Why regarded by Hildenbrand as an exanthem.

Balance of the sanguiferous system disturbed.

The balance of the sanguiferous system is generally much disturbed, from a greater degree of sensorial debility in some organs than in others; and hence, the blood is determined irregularly, and accumulation, effusion, and inflammation are frequent effects. These show themselves chiefly in the head, the lungs, and the liver; but there is no organ in which they may not occur; and they never can occur without danger. All the external senses evince great

External senses torpid.

* Ueber der ansteckenden Typhus, von J. V. Edler von Hildenbrand, &c. Wien. 1815.

hebetude, and especially the hearing, so as often to amount to absolute deafness; the stupor is increased, and the speech muddled; while the patient appears to dream without being asleep, and talks deliriously; thus evincing the typhomania of the ancients; being often unconquerably riveted to a single idea or train of ideas. And, as the nervous exhaustion increases, he is indifferent to every thing, feels little or nothing, and if he answer at all to an inquiry how he is, says he is very well.

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Typhomania of the ancients.

[Typhus fever affords a striking example of the vast change produced in the secretions by disease. The fact is particularly noticed by Dr. Armstrong in his description of the state of the tongue. In typhus fever, he observes, as the lips and cheeks become dusky during its perfect development, a peculiar secretion is besmeared over the tongue and fauces, almost as if the fibrine and albumen had been dissolved, so as nearly to resemble in its adhesive property common melted glue; the tongue itself, from the evaporation of the thinner portions of this secretion, becomes dry, presenting a varnished appearance, like that of a walking-stick; and, at a still more advanced stage, it becomes brown, and ultimately black, from an apparently carbonaceous deposit.

Appearances of the tongue in the progress of typhus.

According to the same physician, in some fully developed cases, where the tongue is glazed, dry, and brown, and the lips and cheeks of a dusky or purple hue, the blood drawn from the temporal artery has a venous colour. The circulation of such blood within the arteries, he says, is connected with many of the most conspicuous and curious phenomena of the advanced stage of typhus. *The cause of this remarkable change can be shown by dissection to depend upon a specific bronchitis,* the mucous texture of the bronchial tubes being loaded with dark blood, and besmeared with a copious and tenacious secretion*.]

Dark colour of the arterial blood.

* See Armstrong's Morbid Anatomy of the Bowels, Liver, &c. p. 8. 14, &c. 4to. Lond. 1828. According to Dr. Burne, the blood flows slowly from divided vessels, is blacker than usual, coagulates less firmly, rarely shows the buffy coat, and, in the dead body, is found black and fluid. On Typhus, or Adynamic Fever, 8vo. Lond. 1828. Dr. Clanny's observations lead to the conclusion, that the watery part of the blood increases in proportion during the progress of the fever; while the quantity of all the animal principles and salts of that fluid is lessened; and that, when the crisis has taken place, the opposite change begins, so that the blood returns to its natural condition. Supposing this statement to be correct, we must not fancy with Dr. Clanny, that fever depends upon the derangement of sanguification, but only that the latter is one of its attendant changes.

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About the thirteenth or fourteenth day, sometimes preceded by an augmented exacerbation, and sometimes without any, the fever suddenly abates, a relieving dew appears on the parched skin, and all the excretories evince the same freedom from spasmodic constriction: the tongue loses its dryness; the nostrils are moistened with mucus, and occasionally discharge blood; the lungs pour forth a free expuition which softens the harsh glottis and the fauces; the bowels, if not loose, feel more refreshed after evacuations; and the urine is more copious with an abundant deposit: and to close the whole, in the elegant language of Professor Frank, "increscunt pulsus, mollisque unda arteriam æquali rhythmo attollit: sequuntur somni placidiores, reficientes, et oblatum ægrotus cibum minùs abhorret*."

Acme about the fourteenth day.

Symptoms of danger.

If, however, no critical change take place about the fourteenth day, leading distinctly to an amended state, the symptoms of putridity increase both in number and degree. There is great faintness; difficulty of respiration, intermixed with deep sobs; the breath is hot and offensive; acute pains in the loins and limbs; a heat upon the skin biting and pungent, rather than burning; leaving a smarting sensation on the fingers for several minutes after touching it, and which, from this very peculiar effect, has been called *calor mordicans*. The tongue, whitish at first, is now dry, dark, livid, black, or of a pomegranate colour. The lips are furred with a black tenacious sordes; the urine becomes brown or blackish with a most offensive smell; a blackish or bilious matter is occasionally thrown up from the stomach; the skin is more or less discoloured, as just observed, with flea-bite-shaped or broad purple spots; the stools are blackish and highly fetid. Cold, clammy, colliquative sweats and convulsions, sometimes accompanied with hemorrhage from one or more organs, soon afterwards usher in death; the period of which is extremely uncertain, and ranges from the fifth to the eighteenth day, according to the malignity of the attack, the strength of the patient, or other contingent circumstances.

Calor mordicans.

This variety rarely produced sporadically.

I have said, that the milder variety or nervous fever usually shows itself sporadically, originating from some other cause, than febrile miasm in an irritable and atonic

* De Cur. Morb. Hom. Epit. tom. i. p. 107. 8vo. Mannh. 1792.

habit. Malignant typhus sometimes commences in the same way, but usually by a decomposition of human effluvium accumulated in a camp, a ship, or even a large single family, where the space is too small for the number, the habits uncleanly, and the atmosphere stagnant and unventilated. The cause is one, and the fever the same, varied alone by accidental circumstances, or symptoms, that depend altogether upon its less or greater degree of violence.

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In this metropolis, therefore, malignant typhus is almost exclusively to be met with amongst the poor; and the more wretched and destitute they are, the more readily they become its prey. I cannot better illustrate its rise and progress, than by the following simple picture as furnished by Dr. J. Hunter: it is drawn from life, and will be easily recognized by every practitioner.

Found chiefly among the poor and destitute, and why.

"A poor family, consisting of the husband, the wife, and one or more children, were lodged in a small apartment, not exceeding twelve or fourteen feet in length, and as much in breadth. The support of them depended on the industry and daily labour of the husband, who with difficulty could earn enough to purchase food necessary for their existence; without being able to provide sufficient clothing or fuel against the inclemencies of the season. In order, therefore, to defend themselves against the cold of the winter, their small apartment was closely shut up, and the air excluded by every possible means. They did not remain long in this situation before the air became so vitiated as to affect their health and produce a fever in some one of the miserable family. The fever was not violent at first, but generally crept on gradually; and the sickness of one of the family became an additional reason for still more effectually excluding the fresh air; and was also a means of keeping a greater proportion of the family in the apartment during the daytime; for the sick person was necessarily confined, and another as a nurse. Soon after the first, a second was seized with the fever; and, in a few days more, the whole family perhaps were attacked, one after another, with the same distemper. I have oftener than once seen four of a family ill at one time, and sometimes all lying on the same bed. The fever appeared sooner or later, as the winter was more or less inclement; as the family was greater or smaller; as they were worse

Picture of the disease in a single family.

Gen. IV. Spec. II. β E. Typhus gravior.

or better provided with clothes for their persons and beds, and with fuel; and as their apartment was more or less confined*."

Causes auxiliary to human effluvium.

There are a few auxiliary causes not noticed in the above faithful delineation, which seldom fail of being present, and have always a very considerable degree of influence; these are, the anxiety and dejection of mind so sure to accompany such a scene of misery, and the increasing carelessness and consequently uncleanliness of person, which are equally sure to follow. And we may hence see, why typhus should so frequently make its appearance in the poorest and most miserable streets of a metropolis, and be generally confined to such streets; why it should rage most extensively and most violently in times of the severest public pressure and distress; and hence again, why it should be more common in Ireland than in England, in Dublin than in London. We also see the inestimable advantage of such establishments as Fever Houses or Infirmaries in all populous towns, when built upon the sound principles, and governed by the judicious regulations, and, I may add, superintended by the active humanity and established talents, which are so conspicuous in the Fever Hospital of this metropolis.

Advantages of fever establishments.

Jail typhus, &c. only a complex enlargement of the above picture.

To describe the typhus of jails, ships, camps, and other large bodies of men, we have only to multiply the single family we have just beheld into fifties or hundreds; ever remembering, that the virulence of the febrile poison increases in power, not in a numerical, but in a sort of geometrical proportion to the numbers by which it is fed. So that if five patients produce a given ratio of pestilence, ten will produce, not as much again, but nearly a hundred times as much. And hence we may readily account for the fearful and deadly ravage, which this cruel scourge is well known to inflict upon a people when closely pressed together, and incapable of flying from its pestilential aura, as in crowded encampments, or a besieged and pent-up town: and especially where, as is often the case, there is considerable carnage from the casualties of war, and a deadly calm prevails for weeks together in the atmosphere. This last concomitant, indeed, gives completion to the

* See Med. Trans. vol. iii. art. xxii.

whole, and is a heavier calamity, than it is generally conceived to be; for the most fatal pestilences, of which we have any account, seem to have been preceded by a stagnant atmosphere. Thus Maitland, in his History of London, observes, "that for several weeks before the plague broke out in this metropolis in 1665, there was an uninterrupted calm, without sufficient motion in the air to turn a vane." The assertion is confirmed by Baynard, a contemporary physician; and a like harbinger, as is observed by Diemerbroeck, preceded the plague at Nimeguen.

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In both varieties, the prognosis must be collected from the vehemence of the symptoms, and the character of the idiosyncrasy; and the cure must depend upon the means we may possess of supporting the vital power, and restoring its lost energy.

Prognosis and means of cure.

The peculiar properties, by which typhous miasm is distinguished from miasms of every other kind, are the rapid and direct debility with which it affects the nervous system; the activity of its leaven, by which it assimilates all the fluids of the body to its own nature; and the urgent putrefactive tendency it gives to every part.

Specific properties of typhous miasm.

The last of these properties may in some degree be dependent upon the first; but it does not appear to be entirely so; since we often find the sensorial power reduced to a much lower ebb, as in asphyxy from hanging or drowning, suffocating exhalations or lightning, catalepsy, and deliquium from loss of blood, while there is an almost infinitely less degree of tendency to putrefaction. And, in like manner, although the miasms of many of the exanthems, as rosalia or scarlet-fever, small-pox and plague, are also capable of tainting the secretions of the body, none of them appear to do it so completely and universally as that of typhus when in its most malignant state; in which the breath, all the egesta, and all the fluids are loaded with contagion. It has been propagated by the excrement*, by the odour of flowers employed to decorate the dead body†; by washing the bandages employed in typhous gangrene‡, and, in innumerable in-

Septic power not necessarily dependent upon its debilitating power.

Proofs that all the secretions of the body are contaminated.

* Riedlin, Lin. Med. 1695. p. 402.
† Eph. Nat. Cur. Dec. Ann. VII. VIII. Obs. 193.
‡ Hennen's Principles of Military Surgery, p. 218.

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stances, by the communication of a minute drop of any of the fluids of the dead body to a punctured finger during dissection.

These peculiar properties should be always in the mind, and guide the practice.

In forming our prognosis, and attempting a cure, these properties should always be prominent in the mind; for they will best enable us to calculate the nature and result of symptoms that are present, and will guide us to the most rational and satisfactory mode of practice.

Congestion and effusion frequent from weakness and irregular action.

From the debility that prevails, even from the first, the pulse is feeble and tremulous, the extreme vessels torpid or nearly so, and the circulatory balance greatly disturbed. Hence, we have reason to expect, that effusion and congestion, or an irregular determination of the blood, will in many cases be an early attendant; and, if there be energy enough remaining in the organs thus affected to produce any degree of re-action, that local re-action will follow, and perhaps lead on to inflammation terminating in suppuration or gangrene; of which Sir John Pringle has given numerous examples. And hence there is some ground for contemplating typhus, as Dr. Armstrong has done, under the three varieties of a simple, congestive, and inflammatory affection; this last being sometimes seated in one organ, and sometimes in another: most frequently perhaps in the brain, where Marcus supposes it to exist in every case whatever; and occasionally perhaps in some of the secreting membranes, through all of which it is conceived, in every instance, to extend by Hildenbrand, the rete Malpighi, the membrane that lines the cavity of the nose, of the mouth and throat, the tunica arachnoidea, and the mucous membranes of the stomach, intestines, and organs of urine and generation*. [It is a fact, now perfectly established, that, in certain forms of fever, the mucous coat of the intestines is often found in an inflamed, ulcerated, or even gangrenous state. The writings of Broussais, Andral†, Ribes‡, and others in France, leave no doubt on this point, which has received still further illustration from the publication of Dr. Bright §, as was noticed in the

Sometimes inflammation.

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* Ueber der anstechenden Typhus, &c. Wien, 1815.

† Clinique Medicale, iv. tomes, 8vo. 1823–1827.

‡ Anatomie Pathologique, tom. i. 8vo. 1828. § Reports, &c. p. 178.

consideration of remittent fever. Besides the affection of the head and nervous system, which seems to be connected with the first impression of fever, Dr. Bright is convinced, that there is a secondary state of cerebral irritation, which depends upon the mischief going on in the intestines; and this often shows itself after the fever has continued for several days, increasing with the increase of the abdominal affection, and going on till it produces that general nervous agitation, with injected conjunctiva and constant delirium, which often closes the scene of life. These observations remind the editor of a fact, which, according to Dr. Ribes, has been completely established by M. Scoutteten from numerous dissections; namely, that the connexion between the intestinal canal and the pia mater is so intimate, that when the former is affected with either acute or chronic inflammation, the latter always participates equally in the affection, with this particularity, that it only happens when the mucous membrane of the bowels is concerned, and not when the serous one alone is disordered. An observation made by Dr. Alison rather corroborates the foregoing statement; as he notices, that, in the worst cases of remittent fever of children, the mucous membrane of the bowels is inflamed and ulcerated, and that one mode in which the case proves fatal, is by sudden conversion into an affection of the head*. The researches of Dr. Bright agree with those of the French pathologists in fixing upon the mucous membrane of the ileum, cœcum, and beginning of the colon, as the principal seat of morbid alteration, though occasionally the same membrane has been inflamed and irritated throughout the whole extent of the intestinal canal. "The appearances (says Dr. Bright) which are most marked in the mucous membrane of the intestines, are those of increased action, vascularity sometimes occurring in patches of greater or less extent, without any obvious dependence on inflammation of the mucous glands, and occasionally extending, under some form or other, through the whole track from the pylorus to the rectum; but this vascularity is more generally connected with inflammation of the mucous

GEN. IV. SPEC. II. β E. Typhus gravior.

Morbid appearances of mucous membrane of the bowels in fevers.

* Alison in Edin. Med. Chir. Trans. vol. i. p. 433.

GEN. IV. SPEC. II. β E. Typhus gravior.

glands, which often appear like the small-pox on the second or third day of the eruption, elevated and almost transparent, with minute vessels which dip into them from the lining membrane of the intestines. They scarcely seem to go into a state of true suppuration, but become distended with a yellow cheesy matter, and slough off; or sometimes ulceration takes place upon their points externally, without any collection of yellow matter being perceptible. The same process, or nearly so, takes place both in the solitary and in the congregate glands; except that, in the latter, the appearance becomes much more formidable, and the mischief more extensive. The masses, or clusters of congregrate glands are chiefly placed along that part of the intestine which is furthest from the insertion of the mesentery; and when the parts are irritated from disease, three, four, or five considerable branches of vessels are seen passing on the mucous membrane, from the mesentery on each side, towards the cluster of congregate glands." The glands themselves enlarge, and, after some time, form a thick flat mass, of a lighter colour than the surrounding intestine. This sometimes increases to the thickness of a half-crown piece, and occasionally even spreads on the top, so that the surface overhangs the base nearly the sixth part of an inch. Sometimes a dark coloured matter, like grumous blood, is deposited amongst the glands; so that the whole mass, instead of being lighter than the intestine, is of a brown colour, elevated evenly above the surface; but, in either case, the mucous membrane is at first only raised, and not broken. In a little time, fissures are formed, and the whole mass ulcerates. When the inflammation subsides, the depth of the ulcer diminishes; and the greater part of the glandular structure being apparently removed by ulceration and sloughing, the edges fall down, and the ulcer becomes shallow, sometimes leaving the muscular fibres nicely displayed, or often exposing the internal surface of the peritoneal coat to the extent of a quarter or half of an inch square. This excavation is filled up by the process of granulation, which, Dr. Bright says, may be seen very beautifully by suspending the intestine, cut open, before a lamp or the bright sunshine, and examining it with a common lens. When the whole is healed, a scar remains

Morbid appearances of mucous membrane of the bowels in fevers.

visible for some time, and appears to be covered by a true mucous membrane. These ulcerations are stated to be quite analogous to those painful and irritating sores, which frequently occur on the lips, or lining of the cheeks. The space, occupied by the ulcers in the intestines, is usually about two feet at the lower end of the ileum, and frequently the valve of the colon, on the side towards the ileum, is the part where the disease is most advanced. A few ulcers are likewise often found in the cœcum, and some are occasionally dispersed along the colon. The peritoneal coat at the back of the ulcers is generally discoloured and vascular, though seldom actually inflamed; which, however, it is sometimes, when the tenderness of the abdomen becomes more marked, and, after death, a sero-purulent effusion is found, and the convolutions glued together with threads of coagulating lymph. In a few rare cases, the ulceration extends completely through the peritoneum, the contents of the bowel becoming effused in the abdomen, followed by general inflammation of that cavity and death. Together with the foregoing changes, the mesenteric glands are usually found enlarged and vascular, particularly those which are situated opposite the intestinal ulcers, and which occasionally suppurate. In the remittent fever of scrophulous children, Dr. Alison represents the mesenteric glands next to the ulcerations of the mucous coat as being much swelled, and of a dark red colour, both externally and internally*. Dr. Bright's investigations confirm the remark of the generality of modern pathologists, as Andral, Percival, Macartney, and others, that, in addition to the preceding morbid appearances of the intestinal canal in subjects destroyed by fever, other organs frequently suffer as much as the bowels, and even more, especially the brain and its membranes, in which marks of congestion are very manifest. Nor, says he, is it at all unusual to find the lungs altered, as in pneumonia, and it is even more common to find them loaded with an extraordinary quantity of blood†.

GEN. IV. SPEC. II. β E. Typhus gravior.

Morbid appearances of mucous membrane of the bowels in fevers.

Many of the cases, in which the above morbid appearances in the bowels were observed by Dr. Bright, seem to

* Alison in Edin. Med. Chir. Trans. vol. i. p. 434.

† See Bright's Reports of Medical Cases, p. 180, et seq. 4to. Lond. 1827.

GEN. IV. SPEC. II. β E. Typhus gravior.

have been of the remittent type; though others were probably typhoid, as far as can be judged from the particulars recorded. The discharge from the bowels is very often dark coloured in typhus, but not always; and hence the circumstance of the morbid changes, pointed out by Dr. Bright, being denoted by the watery ochre-coloured appearance of the feces, must not be taken as a complete proof, that none of his cases were typhoid. It merits notice, that similar alterations of the mucous membrane are particularly described by the French pathologists as occurring in typhus. This doctrine has even been carried to such a degree, that, in France, the question has been entertained, whether the ileum and the valve of the cœcum are the real seat of the disorder, characterized by symptoms usually termed putrid and typhoid? A question, to which, as Dr. Ribes properly observes, a negative answer must be decidedly returned, because some facts prove, that typhus fever may be quite unattended with any of the foregoing morbid appearances in the ileum and valve of the cœcum, and the symptoms be connected with traces of organic disease in the stomach*. We have seen also, that inflammation and ulceration of the mucous coat of the bowels prevail in remittent and other fevers, which are quite different from typhus.]

In what consists the best hope of cure.

It should never be forgotten, that typhus in every stage and variety is one and the same, a disease of sensorial debility; and that our only hope of cure depends on economizing the nervous power that remains, supporting it as far as we are able without farther loss, and opposing the natural tendency of the disease by such tonics as the system will best bear.

As a common rule severe bleeding and purging to be abstained from.

On this account, whatever tends to weaken the animal frame generally, or any one of its functions particularly, must, as a common rule, be carefully abstained from; and hence severe evacuations, by bleeding or purging, are among the foremost objects of prohibition.

The bowels, indeed, ought by all means to be moved by

* Anatomie Pathologique considerée dans ses vrais rapports avec la Science des Maladies, p. 102, tom. i. 8vo. Paris, 1828. A further refutation of this doctrine is contained in the writings of Laennec, and in Burne's Practical Treatise on Typhus, 8vo. Lond. 1828.

a gentle aperient; but beyond this we ought not to proceed, as we shall add to the debility without obtaining any correspondent advantage. The grateful acids of tamarinds, cream of tartar, or prunes, are preferable, if found sufficiently powerful; but, if not, they should be combined with rhubarb or senna. And, as the stomach is less irritable than in yellow fever, an emetic may be given whenever indicated; but, unless there be a troublesome nausea, even this had better be avoided. Ipecacuan will answer better than antimonial preparations, and the evacuation should be followed with a cordial draught.

Gen. IV. Spec. II. β E. Typhus gravior. Treatment. Gentle aperients; but not emetics, unless nausea be present.

[On this part of the subject, the following observations relative to the treatment of fever in general, as delivered by Dr. Bateman, seem judicious. The first object is to arrest the febrile affection, if possible, in its very commencement, by means capable of exciting a kind of shock in the system. The two most efficacious remedies of this nature are emetics, and the affusion of cold water on the skin; a plan which will be presently considered. The first has this advantage, that it may be employed in the very onset of the fever, during the presence of the rigors; while the second, although perhaps more powerful, is inadmissible until the hot stage be completely formed. If an active emetic be given during the chills, and a free vomiting be excited, the cold fit is often speedily terminated, and a general glow, accompanied with a degree of perspiration, is produced. Or, if the emetic be delayed until the hot fit has commenced, its operation is frequently followed by a free perspiration, as well as a relief of every symptom *.]

But congestion, as already observed, may take place, and this too in the larger and more important organs of the animal frame, as the head, the lungs, or the liver†. If in the first, there will be a sense of oppression in the brain, most commonly combined with stupor, or low muttering delirium; if in the second, a laborious weight on the chest and a difficulty of respiration; if in the third, the

Marks of congestion or oppression.

* Bateman, in Rees's Cyclopedia, art. Fever.

† For further information respecting the state of these organs, see Dr. E. Percival on the Epidemic Fevers of Dublin in 1813, 1814, and 1815; in Dublin Hospital Reports, vol. i. p. 304, &c. Also Dissections by Dr. Macartney, recorded by Dr. Barker, in Trans. of King's and Queen's College of Physicians, vol. ii. p. 574 et seq.—Editor.

GEN. IV. SPEC. II. β R. Typhus gravior. Treatment.

bowels will usually be found costive, the motions pale and argillaceous, and sometimes the skin and the urine chlorotic, or of a greenish-yellow from a regurgitation of morbid bile into the sanguineous system. Hence the fever will be aggravated from local irritation, and the affected organ will be in danger of inflammation, if not of gangrene.

Is the general rule here to be departed from?

Is the general rule in this case to be departed from? is blood to be taken from the system? and, if so, is it to be drawn locally or generally? and to what amount?

Only a choice of difficulties left: but the danger must be combated boldly and rapidly, and by free bleeding.

We have here only left to us a choice of difficulties. Nothing, as Dr. Fordyce has justly observed, is more dangerous in any fever, than its affecting one part more than another; but in typhus the danger is extreme, and it must be combated boldly and rapidly by whatever plan has a chance of taking it off, and however hazardous in itself, provided the hazard be less than that of the disease. And hence, in this case, bleeding must be had recourse to, for there is nothing we can so well depend upon. If we have reason to believe, that the overloaded organ is without inflammation, the blood should be drawn locally and till relief is afforded; if there be good ground for suspecting that inflammation has commenced, and especially if the organ affected be large and important, it will be better to employ the lancet; and it cannot be employed too soon, nor ought it to be relinquished till it has attained its object*. There is a risk in the practice; but there is death without it. Fainting may perhaps take place in the midst of the operation; but this is rather to be wished for than guarded against; for the exhaustion of sensorial power, produced by deliquium, bears no comparison to that produced by the influence of the typhous miasm.

Risk in the practice, but death without it.

The following remarks of Dr. Baillie upon this subject, as indeed upon most others, are peculiarly important; and the more so from the modesty with which they are given, and the striking proof of the candour which so particularly distinguished this great and experienced man. It is thus he writes towards the close of his active and honourable career. "During the greater part of the time in which I have practised medicine, physicians in general, and my-

* J. P. Frank, De Cur. Hom. Morb. Epit. tom. i. p. 136, 8vo. Mannh. 1792.

self among that number, have, I believe, been too sparing in taking away blood in typhus fever. It was hardly ever directed to be taken away from the arm, and not often locally, except by the application of leeches to the head. Of late years many physicians have gone into the opposite extreme, and have taken away blood too profusely. In the course of a few years, this remedy, like every other, will find its proper level*."

Gen. IV. Spec. II. β E. Typhus gravior. Treatment.

In the above state of the disease, also, instead of merely keeping the bowels open, we should employ purgatives that will maintain a stimulating effect upon the whole of the intestinal canal, so that three, or even four, evacuations may be obtained daily; and calomel will be commonly the best medicine for this purpose. [When the symptoms indicate irritation and ulceration of the mucous membrane of the bowels, Dr. Bright prescribes the hydrargyrum cum creta, and the compound chalk powder, with or without ipecacuanha; and if the alvine evacuations are too scanty, he gives castor oil with a few drops of laudanum. This, with fomentations, leeches, and cupping of the abdomen, according to circumstances, is the practice from which he has seen the greatest benefit result, where fevers are attended with the complication of diseased mucous membrane of the bowels†.]

Stimulant purgatives.

Treatment of diseased mucous membrane of the bowels.

Such are the exceptions, and the only ones, we should allow to the general rule of opposing the disease, by economizing, supporting, and restoring the depressed tone of the nervous system. But there are pathologists, and of considerable authority, who recommend bleeding, and even full bleeding, in almost every instance of the disease, as the first step to be pursued: thus inverting the mode of practice here laid down, and taking the exceptions for the rule, and the rule for the exceptions.

Examination of the practice of venesection as a general instead of a special rule.

The theory of this recommendation is but of little importance, provided it be justified by its result. At the same time, I cannot avoid observing, that its chief advocates have not been able to bring themselves to any thing like a common theory, or to support their recommendation

The advocates for such practice not agreed upon common principles.

* Lectures and Observations on Medicine by the late Matthew Baillie, M.D. 8vo. 1825, unpublished. Printed by Taylor.

† See Bright's Reports of Medical Cases, p. 184. 4to. Lond. 1827.

GEN. IV. SPEC. II. § E. Typhus gravior. Treatment.

upon common principles; than which nothing can be more unfavourable to the reception of a doctrine, or more hostile to its scientific pretensions. Typhus is, by Dr. Clutterbuck, regarded, like every other kind of fever, as the result of an inflammation of the brain; and blood-letting is here grounded upon the principle of attacking the cerebral inflammation, and *debilitating* the action of the living fibre. The visceral and other local congestions and inflammations that so often occur, are, by Dr. Armstong *, regarded as precursive and generative of the sensorial debility, while the disease itself is no more derived from the brain, than from any other organ. And blood-letting, under this view of the subject, is recommended as the means of *preventing* debility in the living fibre, instead of *adding* to it. "We may perhaps find," says he, "sufficient data for concluding that the nervous appearances, even from the very first attack, are only secondary of vascular disorder." Now, these hypotheses, discrepant as they are from each other, may be both founded upon a mistake of the effect for the cause†. And such, indeed, seems to be the general opinion of pathologists upon the subject; and hence, even admitting the benefit of blood-letting as an invariable or common rule, we have yet to search for *some other reason*, by which such benefit is to be explained. Dr. Jackson thought he had found this reason in the *stimulant* effect of venesection upon the system at large, which, by exciting new motions, suspends or changes morbid motions, and affords room for the vires medicatrices naturæ to act with a more salutary power; while, by its mechanical effect in diminishing the circulating fluid, it adapts the moles movenda to the vis movens. Venesection, therefore, upon Dr. Jackson's hypothesis, acts not by debilitating, or even preventing debility, but directly by *invigorating* the living fibre; and in this view he employed it in fevers of every kind, entonic and atonic, inflammatory and putrid, and, in his own belief with nearly equal success.

Employed to debilitate the living fibre.

Employed to prevent debility in the living fibre.

Employed directly to invigorate the living fibre.

But this is to regard the blood as an incumbrance, a dead and foreign body in its own vessels, instead of as a

* Practical Illustrations of Typhus, &c. 8vo.

† Appendix to his Remarks on the Constitution of the Medical Department, &c.

living and nutrient principle; the removal of which affords ease and freedom to every part of the animal frame, and clears it for the contest in which it is about to engage. A violent and general commotion, produced in the system from severe bleeding, or any other cause, cannot fail of exciting a very deep impression upon every part; and has often suspended or changed the actual train of motions, and introduced a new train in its stead; and, in various instances, the change has unquestionably been beneficial and even salutary. This is particularly the case in sudden and overwhelming excitements of mental emotion, which have, sometimes, abruptly cut short the career of fevers as well as of various other complaints; of which the Baron Van Swieten gives a striking instance in a man, who, while labouring under a continued fever, with delirium, was so alarmed at the terrific aspect of a person that burst suddenly into the sick room, vociferating that the house was on fire, which in this case was the fact, that he rose without help from his bed, ran out of the house with all speed, and was well from that moment. To this principle of salutary change of action, excited by a violent and general commotion throughout the system, it is probable, that we are to ascribe the occasional benefit that has followed upon draining the vessels of blood in diabetes and even in lyssa or canine madness. And it is possible, therefore, that copious venesection may, also, in many instances, have cut short the attack of typhus, and thus proved a rapid and effectual remedy. But, if this be the ground upon which it acts, few practitioners would be disposed to recommend it; while, if it be not, we have no other ground that will furnish us with a satisfactory explanation.

In what manner severe bleeding is sometimes serviceable in other cases than inflammation.

Singular case from Van Swieten.

Exemplified in diabetes and lyssa.

In the commotion which takes place from copious venesection, it should moreover be observed, that there are often local determinations of other kinds or to other organs; for, the more we lessen the general strength, the more we make an inroad upon the instinctive power of preserving a balance in the circulating system; and as these new determinations are almost uniformly accompanied with an apparent, though a deceptive, increase of force as well as of fulness in the pulse, and other symptoms of great violence of action, the friend to phlebotomy is too often stimulated to an exercise of his lancet through se-

Other evils resulting from the practice.

GEN. IV. SPEC. II. β E. Typhus gravior. Treatment.

we do harm: indeed, in general," continues he, "I imagine bleeding seldom did much good; and if great caution were not used, I suspect it was hurtful: but as I was not often called in the beginning, I am unwilling to pronounce positively about it." The passage is well worthy of attention, as containing the free opinion of an able, candid, and distinguished writer upon an extensive examination of the subject in his own day: and an opinion, too, which is very considerably in accordance with the opinion and practice of Sir John Pringle and Dr. Huxham, and still more lately of Professor Hildenbrand, who is well known to be one of the most extensive practitioners in the disease before us, as well as one of the most able writers upon it in the present day.

Its expediency often dependent on the state of the atmosphere.

It should never be forgotten, however, that the expediency of bleeding must depend, not only on the diathesis of the individual, but very considerably on the state of the atmosphere. This remark I wish to enforce very strongly on the attention of practitioners, as it is derived from experience, and is of more importance, than it may at first appear to be. As inflammatory fever has sometimes a tendency, from peculiarity of constitution or accidental circumstances, to run rapidly into typhus, typhus, in like manner, occasionally meets with incidents that suddenly reverse its character, and incline it to an inflammatory type. A very stimulant plan of treatment has sometimes done this; but, far more frequently, a sudden change in the atmosphere, from hot, hazy, and relaxing weather, with scarcely a breath of air stirring abroad, to a dry, cool, and refreshing east or north-east breeze: and I have often found a like tonic effect produced upon a patient labouring under typhus in a low, damp, filthy, and suffocating lodging, upon his being removed into a large, cool, pure, and well-ventilated chamber, such as is now generally found in our fever institutions. In this case, bleeding, which I had not dared to risk, notwithstanding some symptoms of oppression, before the removal, has been practicable without any risk afterwards, and has laid the foundation of a speedy and effectual cure; and I am inclined to think, that some part of the clash of opinion, which prevails upon this subject in the present day, proceeds from a want of due attention to the different states

Clash of opinion capable of being considerably reconciled.

in which different or even the same patients are placed by this difference in the purity and temperature of the surrounding atmosphere; and that many hospital physicians, who are the warmest advocates for sanguineous depletion in their own fresh, cool, airy wards, would hesitate upon its expediency if they were to attend their patients throughout in their own close, heated, and miserable habitations. Gen. IV. Spec. II. β E. Typhus gravior. Treatment.

[This accords with Dr. Alison's experience, who remarks, that "there is probably less typhoid tendency in the earlier stages, and more demand for evacuations in the hospitals, than in the houses of the poor*." The ill effects, however, which this able physician imputes to the removal of patients in the second week of the disease into a pure cool air, seem to the editor more justly ascribable to the disturbance of such removal, than to the altered quality of the air itself. That great and decided benefit does result from the timely removal of the patient out of a bad atmosphere, is proved by the valuable testimony of Dr. Bateman, who "frequently experienced the great and obvious benefit of a cool and well-ventilated room, independently of medicine. He has visited patients who had applied for admission into the House of Recovery, in their own close and suffocating apartments, and found them in a state of delirium, with dry black tongue, great heat, and other bad symptoms. Having directed them to be removed to the house, he has found them cool and perfectly collected, with other symptoms of equal amendment, on the following morning, from the mere influence of a cool bed and an airy apartment†." No doubt, however, Dr. Alison's opinion on the disadvantage of removing the patient in a late stage, is perfectly well founded, as the editor of this work has had many opportunities of learning from experience.]

It is not long since that I was consulted by a very respectable practitioner in Hertfordshire, upon a plan of treating typhus, which was then raging with great violence among the poor of the town in which he resided. He had been a surgeon in the naval service of the East India Company; and, having witnessed the benefit of early and Farther illustration.

* Alison, in Edin. Med. Journ. No. 93. p. 250.

† Art. Fever; Rees's Cyclopædia.

GEN. IV. SPEC. II. β E. Typhus gravior.

Treatment.

copious bleeding in the yellow fever, had very generally followed it up in the contagion before him, and, as he frankly confessed to me, with a decidedly unfortunate result. My advice was, before he thought of the lancet to take care of the ventilation; and then to subject it to the restrictions here laid down, and to let every case be its own interpreter. And a letter, received from him a few weeks afterwards, expresses his obligations for the advice, and the success that had resulted from it.

Hospital at Bilboa, in 1813.

Upon this subject there is a passage in Dr. Hennen's Military Surgery so strikingly in point that I cannot avoid quoting it. After the famous battle of Vittoria, in July, 1813, the sick and wounded of the British and Portuguese army were chiefly removed to a temporary hospital established at Bilboa; where typhus miasm having soon been produced by its ordinary causes, viz. a foul and stagnant atmosphere, crowded wards, and depressed spirits, the sick were soon affected, and, whatever was the nature of the individual constitution, the wounds of all of them ran rapidly into a typhus gangrene; "exhibiting," says Dr. Hennen, "one of the most subtile and destructive poisons that ever infested an hospital, attacking equally the most robust and the most debilitated, and, if unchecked by medical aid, proceeding invariably to a fatal termination *." The atmosphere was, at this time, sultry and relaxing, and greatly contributed to the general debility. "I need scarcely say," continues Dr. Hennen †, "that a remedy so strongly recommended as venesection had early occupied our attention: but previous to the month of October the obviously typhoid type of the disease made us extremely averse from employing it. At that period, however, a change in the weather from sultry to cold, and even frost (at night) took place, marked by a corresponding change in the thermometer, which, at its medium range was 20° lower than in the preceding month.—But what more than all convinced us of the change of type, and pressed on our consideration the propriety of blood-letting, was, that the spontaneous hemorrhages, which formerly sunk the patient's strength, were now accompanied with obvious

* Principles of Military Surgery, p. 19. † Id. p. 223.

relief." And he proceeds to state, that, from this time the practice of venesection, on the appearance of inflammatory symptoms in a wound or newly-healed stump, became general, and was the only remedy had recourse to, whether as a cure or a preventive.

GEN. IV. SPEC. II. β E. Typhus gravior. Treatment.

Of such importance is it for us to be guided by particular and general circumstances in the treatment, not merely of typhus, but of all diseases whatever: to let the rule have its exceptions, but not to mistake the exceptions for the rule. "The art of physic," says Sir George Baker, rarely admits of any perpetual precepts; and the best medicine may do harm if not adapted to the patient as well as to the disease*."

Importance of being guided both by particular and general circumstances.

There is another remedy of very extensive use in the cure of typhus, far less disputable, and which is founded altogether upon the indication of equalizing, supporting, and restoring the sensorial power: and that is, the free application of cold water, and especially externally.

Cold water as a remedy,

This valuable medicament has been employed in some form or other almost immemorially. Hippocrates recommends it in malignant fevers generally in the form of epithems, or napkins wetted with cold water, and applied repeatedly to the head, or any other viscus, as the cloths become warm†. Among the later Greeks, however, it does not appear to have been in very general use; and though it is highly prized by Celsus, in various debilities, and especially sensorial debility affecting the head, and combined with fever, in which, says he, "existat validissimè repentè aqua frigida infusa‡," yet it does not seem to have constituted a fixed, or even a frequent practice in his day. In our own country, it was successfully employed by Dr. Willis in various fevers, and especially those accompanied with delirium; and was hence strongly recommended by Sir J. Floyer and Dr. Baynard: and was used on the continent, not merely in the form of epithems§, and affusions, but occasionally in that of immersion, or cold bathing in a river adjoining the patient‖.

employed almost immemorially;

though not very generally adopted in Greece or Rome.

Early as an external application in England.

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* Med. Trans. III. 417.

† Περὶ Νουσῶν, II. p. 484. 50.

‡ Medicinæ, lib. III. sect. XX.

§ Mursinna über Ruhr und Faulfieber. Loeffler, Beytrage, &c.

‖ Eph. Nat. Cur. Dec. III. ann. iii. obs. 48, and ann. v. vi. app. p. 128.

GEN. IV. SPEC. II. β E. Typhus gravior.

Treatment.

Still earlier on the continent.

Used internally as well as externally.

Snow-water.

Snow alone.

Singular case from Benevuti.

Body torpid to the action of external influences.

On the continent, indeed, it seems to have been employed at a much earlier period than in our own country, as we learn from Milot's Dissertation, "Ergo febris frigidis et humidis expugnenda?" printed at Paris in 1594; and Hernault's, on the same subject, "Ergo propria febrium medela refrigeratio?" printed in the same place in 1630. It was also used internally as well as externally, both in our own country as well as on the continent, especially in Spain and Naples, as is obvious from Dr. Hancock's Febrifugum magnum *, and Dr. Cyrillo's paper on the subject in the Philosophical Transactions. Even snow, or snow-water, under the name of aqui nivata, or aqua nive refrigerata, was also occasionally employed †; and, in the ardent fever, recommended by Paulini both externally and internally ‡. Professor Hildenbrand, of Vienna, during the extensive range of practice, which the Austrian army afforded him in the late war, employed sometimes the cold bath, sometimes affusion of cold water, and sometimes a general friction of the surface with snow itself in the commencement of the fever §. And to prove how torpid to common impressions the body is under nervous fevers generally, and how little disposed to be injured by such applications, it is only necessary to advert to the case of a patient at Lucca, given by Dr. J. Benevuti, in another part of the Transactions just referred to. On the ninth and tenth day from the incursion of a malignant fever, he was thought to be in great danger. On the eleventh he expressed a wish to go to sleep, and desired the attendants to withdraw. On their return he was found to have left his bed; and, three days afterwards, was discovered in a hut in a vineyard, about two miles from the house, having but just recovered his senses, and as much wondering how he came there as those who had traced him out. It appeared, on farther inquiry, that he had descended from his chamber by the window, in his shirt alone, and in a great

* Febrifugum magnum; or common Water the best Cure for Fevers. Lond. 1752.

† Nouvelles Annales de Médecine, IV.

‡ Cent. i. obs. 66.—See also Nehemias (Abrah.) De tempore aquæ frigidæ in febribus ardentibus ad satietatem exhibendæ, 8vo. Venet. 1591.—Planchon, Journ. de Med. tom. xxx. p. 127. Lamarque, id. tom. lxvi. 460. lxvii. 68.

§ Ueber den ansteckenden Typhus, &c., ut suprà. Wien, 1815.

perspiration; had walked all the way in the snow with which the ground was then covered, and had swallowed a large quantity of it to quench his thirst. Yet neither the cold air, nor cold beverage, affected him otherwise than beneficially. He continued well from this time*.

GEN. IV. SPEC. II. β E. Typhus gravior. Treatment.

The use of cold water, however, as well external as internal, appears on many occasions to have been employed with too little caution; and hence one reason of its falling into frequent disrepute. Even as early as 1581, Masini thought it right to guard the profession against its abuse, by a work expressly devoted to this subject†; and numerous others occurred in succession through the ensuing century.

Cold water formerly employed incautiously.

In our own day, Dr. Wright of Jamaica is, perhaps, the first physician who revived the practice; but it is chiefly to the judgment and experience, the writings and recommendation of Dr. Currie of Liverpool, that cold water as an external application is indebted for the high and deserved degree of popularity it again possesses, and especially in typhus.

Practice of the present day: by whom renewed.

It is now equally used in the form of sponging, ablution, and affusion, the last of which is the καταάχλυσις of the Greek writers, though this term sometimes also imported immersion. All these are of essential use; yet the most sudden and decisive benefit has been observed to result from affusion; for which purpose the patient is to be supported on a stool in a low wide tub, and to have a small bucket of water, containing about two gallons, poured briskly on his head, and repeated four or five times in the course of the twenty-four hours, when the surface of the body is hot and without perspiration. In many cases this plan alone has proved successful, and the fever has been cut short in a day or two from its commencement. But the method is too violent and exhausting to be employed after the first three or four days of attack; after which it will generally be most useful to restrain ourselves to epithems about or all over the head, the hair being removed for this purpose, or to sponge the body generally:

In what forms employed.

Regulations in the use of it.

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* Phil. Trans. viii. 1768.

† De Gelidi Potûs abusu. 4to. Cesen.

GEN. IV. SPEC. II. β E. Typhus gravior. Treatment.

and if the sensorial debility be extreme, we should prefer tepid to cold water, or mix with the cold water a little brandy or other spirit. When this method succeeds, the usual salutary effects are, a considerable diminution in the number of the pulse; diminution of heat and head-ache; natural sleep, and a breathing perspiration.

On what principle the practice is beneficial.

It does not appear to me that the principle has yet been fully explained, by which the external application of cold water becomes thus unequivocally beneficial. This is

Whether the water operates as a tonic?

generally referred to its tonic power in exciting a reaction as the result of its chill. But though affusion often produces not only a chill, but even horripilation, sponging the body with tepid or even with cold water produces no chill of any kind; and there are many cases of extreme debility in which, if a chill were to take place, it would be most mischievous, and certainly would not be succeeded by any heat or reaction whatever. Independently of which, the refreshment takes place too speedily for such an effect, and is of a different and more tranquillizing kind, than the excitement which follows upon the chill of cold bathing in a state of health. And I cannot, therefore, but think it probable, that much of the good effects of the external application of cold water in typhus and other complaints

Whether by decomposition?

depends upon a decomposition of the water; though whether by an absorption of caloric or of oxygen, alone or in conjunction with any other principle hereby set free, is by no means easy to determine. There is yet much to be learnt upon the cause of that beneficial excitement which the decomposition of water exhibits in various bodies, both organic and inorganic, with which it comes in contact.

Illustrated analogically.

We see plants instantly revived, the fire in the blacksmith's forge instantly quickened, and not only tile-eels and other animalcules, but even snails, apparently dead, and that have been kept as dried preparations from five to fifteen years*, start instantly into new life upon the application of cold water. Yet no chemist or physiologist has hitherto satisfactorily explained by what means these effects are produced. And I throw out the hint, that so instruct-

* Spallanzani, Hist. Nat. tom. II. ch. iii. Phil. Trans. 1774, p. 432.

ing a subject may be followed up by those, who have time and ingenuity for experiments in relation to it.

Treatment.

Upon internal medicines we can place but little dependence, except where they have pretensions to a tonic power, are moderately cardiac, or tend to equalize the nervous influence or circulating fluid.

How far internal remedies useful.

The chief tonics, in use among the Boerhaavians, were the serpentaria and contrayerva, on account of their systematic objection to the bark. The tonic power of these, however, is but feeble; by their stimulant property, they sometimes prove diaphoretic: but even as cardiacs their place is better supplied by other medicines; and in proportion as the bark has established itself, they have gradually fallen into disrepute. Yet even this last seems to be following the same track in the opinion of some practitioners of the present day, who have withdrawn all confidence in it, and undertake to affirm, that it has uniformly done more mischief than good. But this is strangely to set aside the wisdom of former times, and to misconstrue the train of phenomena before them. Bark, like every other medicine, is necessarily injurious when injudiciously made use of; but there are few, if any, medicines of more importance, even in typhus, when there is a fit opportunity for employing it. Where the stomach is irritable, and will not retain it, or so feeble in its secernent power as not to digest it, and particularly, where there is a tendency to local accumulations, it ought unquestionably to be avoided, till these symptoms are subdued by other means. But, where there are no such objections, it cannot be begun too soon, though it should not be pressed in such large doses as in the more rapid course of yellow fever. And where the bark cannot be made to sit easy on the stomach, its place may be well supplied with columba, either in powder or infusion. I need not add, that the sulphate of quinine is its best form.

Tonics of the Boerhaavian school feeble: and have yielded to cinchona:

now itself slighted by many;

but without sufficient reason.

Columba.

If the skin be greatly heated and dry, either of these medicines may be combined with nitre or a solution of the acetate of ammonia; and if the prostration of strength be considerable, we may employ camphor or wine in conjunction with tonics.

Combined with neutral salts,

camphor and wine.

Camphor has, indeed, been united with medicines of very different powers; as with large doses of nitre, which

GEN. IV. SPEC. II. β E. Typhus gravior.

Haenel seems to have found highly serviceable *; or nitre and calomel, which was at one time a favourite practice in Germany †; or, which is far better, with cinchona, a combination peculiarly recommended by Lasonne as increasing the energy of each, in which opinion he is joined by Dr. Cullen. Camphor, however, is in itself a highly valuable medicine on the present occasion, and cannot well be given too soon. It calms the low delirium, produces a genial glow on the surface, and seems to act as a steady permanent cordial. It was chiefly trusted to by Professor Hildenbrand during the late war, though he often united it with arnica; and, believing that no practice whatever could shorten the natural course of the disease, endeavoured to sustain the system by these remedies almost exclusively.

Treatment.

Camphor highly prized alone, or in combination.

Its beneficial effects.

Rarely given in sufficient doses.

In our own country, however, it is rarely employed in doses sufficiently large to be of service, as I have already had occasion to observe. Gieske was accustomed to begin with half a drachm, and increase the dose to a drachm, three or four times a day or oftener ‡. It was given with equal freedom by Stoll §, Salle ‖, and Chambon de Montaux ¶: and Collin after several hundred trials affirms, that he has never in a single instance found the pulse quickened, or the heat of the body increased, by giving it to the amount of half an ounce a day. It is singular after this, that Hildenbrand, notwithstanding his peculiar attachment to camphor, should limit its employment to not more than ten or twelve grains a day. It has by many practitioners been united with some acid: and the form of an acetum camphoratum was at one time a very favourite, and no doubt effective, medicine in Germany **.

Acids: their action.

Acids, indeed, of all kinds, and acidulous drinks, are of great benefit in typhus. They allay the heat, tranquillize the restlessness, support the strength, and oppose the tendency to putrescency. The muriatic was preferred by Sir William Fordyce, but the sulphuric appears to be equally efficacious, and is much pleasanter.

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* Epist. ad Haller. II.

† Abhandlung von der Wirkungen des Camphors und Calomels in anhaltenden Fiebern.

‡ Ibid.

§ Rat. Med. iii. 89.

‖ N. Beitrage, i. 171.

¶ Traité de la Fièvre Maligne.

** Ludwig, Adversaria, i. i. N. 1. Bonnevault, Hautesierk Recueil, ii. p. 228.

Gen. IV. Spec. II. Æ. Typhus gravior.

The best cordial is wine, and it must be given in proportion as the living power flags. We must be cautious, however, in first administering it; for its very stimulus produces exhaustion, and consequently increased torpitude: and we should invariably recollect, that, when we have once commenced with its use, we can never leave it off; and should hence begin with such doses only as may be safely persevered in, or even increased if necessary.

Treatment.

Wine: how best employed.

Under the influence of Dr. Brown's name, both wine and spirits were lately given in enormous quantities; and it is possible, that, in a few instances, the practice may have been successful; but the risk is great and empirical; yet the practice is by no means of so late an origin as Dr. Brown's name would incline us to believe: for Borelli, Chambon de Montaux, and Reidlin, gave it quite as largely, and at least with as much success. Borelli prescribed it in injections*; Reidlin assures us, that he cured a patient by administering a large dose of spirit of wine†, upon which Brown does not appear to have ventured; and we are told by another writer, long before Dr. Brown's time, that he completely succeeded in conquering a typhus by making his patient drink wine to ebriety on a critical day‡. Of phosphorus, which was also a famous cordial at one time, I can say nothing §.

Spirit of wine given formerly.

Cured by ebriety.

Phosphorus.

Opium.

The same remark will apply to the use of opium, which appears to be of less service in typhous, than in many other species of fever, and by no means entitled to the unmeasured eulogy bestowed upon it by Dr. Home, who contended, that in every case of typhus, it was the most useful medicine; that it procures rest without any inconvenience; and that it is more to be depended upon than camphor, castor, the sedative salt of Homberg, or any other medicine of the same class‖. It is best given in combination with camphor; and there is ground for the assertion of Lasonne and Hall, that, thus united, it produces less confusion of the head and disturbance in the dreams: and, so far as I

Best in union with camphor.

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* Cent. I. Obs. 55. † Lin. Med. 1695. p. 220.

‡ Eph. Nat. Cur. Dec. I. Ann. III. Obs. 145.

§ Vater, Diss. Phosphori loco medicamenti adsumpti virtus medica. Witteb. 1751.—Thomas, Diss. de usû Phosphori. Regiom. 1762.

‖ Clinical Experiments, Histories, and Dissections. 8vo. Edin. 1780.

GEN. IV. SPEC. II. β E. Typhus gravior. Treatment.

have seen, it agrees better with the young, than with those of middle life. Hildenbrand reserves it in every instance against distress from dysentery or diarrhœa.

Antimonials not often useful.

Antimonials are a doubtful remedy: they tend to throw the action towards the surface; but, as relaxants, they tend at the same time to diminish the tone of the muscular fibre. It is not often that they can be employed with advantage.

Blisters.

In many instances, blisters, judiciously interposed, will be found useful auxiliaries, and especially where the head is much affected; but the body should not be covered with them, as is often the case from head to foot, so as to be highly distressing to the patient, and to exhaust the little irritability he has left. Cataplasms or bottles of hot water applied to the feet, when the circulation is unequal, will often be a better practice.

Diet and regimen.

During the entire course of the fever, from the time the bowels have been sufficiently evacuated, the patient may be allowed animal broths and jellies in alternation with the farinacea: he should be lightly covered with bed-clothes; his chamber should be freed from all unnecessary furniture: his sheets and body-linen be frequently changed, and be instantly taken out of the room; as should also the egestions of every kind.

Free ventilation.

Above all things, the chamber should be freely ventilated, which is infinitely the best way of purifying the air, and dissolving the febrile miasm as it issues from the body: upon which subject we have already touched. Where the ward or chamber is large, or the sick are remote from each other, simple ventilation by opening the opposite windows, or the windows and door, will be sufficient. But where the wards are small, or may not admit of sufficient ventilation, or the patients are numerous, fumigation with nitric or muriatic acid should not be neglected.

Fumigations when necessary.

At present we have no reason for a preference, except that the vapour of the former appears to be rather more volatile and penetrating.

Lately decried;

Of late years there have been attempts to decry the use of fumigations, and especially by M. Von Mons and Dr. Trotter, who conceive that they rather increase, than diminish the septic matter of the atmosphere. On which account, they rather advise the room to be frequently sprinkled with water, and a good fire to be maintained, believing that febrile contagion is

much better destroyed by pure aqueous vapour, than by any other means. GEN. IV. SPEC. II. β E. Typhus gravior.

But this conception is founded upon a double hypothesis, and an hypothesis apparently mistaken upon both points: first, that febrile miasm, and septon, or the elementary matter of putrescency, are the same thing: and next, that this common principle is nitrous oxyde, or oxyde of azote, agreeably to the conjecture of Dr. Mitchell. Of septon, however, we know but little; yet, from the established power of hydrogen in exhausting or destroying animal irritability, it is more probable, that M. Morveau's conjecture of its being a combination of hydrogen with azote, rather than of oxygen with the same, is the real fact. But be this as it may, we have no more reason for believing, that febrile miasm consists of either of these, than that it consists of animalcules of a peculiar kind, as was once contended for by Dr. Chandler. Treatment. but on false principles.

Febrile miasm we have reason to believe is a peculiar and specific production; the chief properties of which I have already endeavoured to point out. Pure air unquestionably dissolves it; and hence, there may be other gases capable of dissolving it also, and even more readily; or which, combined with pure air, may render the latter a speedier and more powerful solvent. And it is probable, that the vapours of the mineral acids act in this manner. In this respect they may be useful; but if ever employed to supersede ventilation, the opinion of Dr. Trotter, that they do more mischief than good, will be completely established. The aromas of volatile plants are of no benefit whatever; and if the fumes of tobacco were ever serviceable in the plague, it was most probably, as Dr. Cullen conjectured, from their exhilarating the spirits, like wine or opium, and diminishing the irritability. How acid fumigations probably act. Aroma of plants. Tobacco.

[A few years ago, M. Labarraque discovered, that the chloride of lime, now generally employed instead of chlorine for bleaching, likewise possesses the power belonging to that gas of destroying putrescent effluvia. It is also suspected to have considerable power in destroying the effluvia of infectious disorders. Hence, its use is ordered by the French government in all hospitals and lazarettos. The powder should be dissolved in forty or forty-five parts Disinfecting power of the chloride of lime.

Gen. IV. Spec. II. β E. Typhus gravior. Treatment.

of water *. Such a lotion would undoubtedly have more effect against contagious effluvia than simple water: the skin, when hot and dry, might be freely sponged with it; and the room sprinkled with it. Indeed, the preparation called the hydrochloruret of lime is recommended by Dr. Reid, as an internal remedy, in certain stages of fever and dysentery†. It has also been given by Dr. Cloquet in doses of from 20 to 30 minims, in examples of gangrene, as well as applied to the part‡. The chloruret of soda has also similar powers.]

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## SPECIES III.

## ENECIA SYNOCHUS.

### *SYNOCHAL FEVER.*

COMPOUNDED OF CAUMA AND TYPHUS: IN ITS COMMENCEMENT RESEMBLING THE FORMER; IN ITS PROGRESS, THE LATTER.

Gen. IV. Spec. III. The most common form of continued fever in the present day.

It is not necessary, after our copious histories of the two preceding species, to follow up the present, which is a mixture of both, through a detailed description of its course. It is certainly the most common form, under which continued fever makes its appearance in our own country; for it is but rarely that cases of fever occur, which preserve a strictly inflammatory character from the beginning to the end. It is in fact an inflammatory fever bent out of its proper career, often, perhaps, by the temperament upon which it has to act; but still more frequently,

General character.

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* See Professor Marc's Official Report; also Kopp's Reise in Deutschland und Frankreich, p. 198; and Edin. Med. and Surg. Journ. No. 89, p. 447.

† See Reid's Clinical Observations on the Efficacy of the Hydrochloruret of Lime, &c. Dub. 1827.

‡ See Alcock's Essay on the Chlorurets of Oxide of Sodium and Lime. 1827.

as Dr. Brocklesby has well observed, by confined and vitiated air, and hence dropping its inflammatory pretensions in the middle of its course. Its causes are therefore the same as those that produce inflammatory fever. Dr. Cullen has entered it into his catalogue of genera after Sauvages and Linnéus; but with a doubt whether he is correct in so doing. "Since many fevers," says he, "are neither altogether inflammatory, nor altogether nervous, they cannot be referred either to the synocha (cauma) or the typhus: and I have hence inserted the genus synochus, whose type is frequently seen in this country. Yet, between the typhus and synocha, I cannot place any accurate limits; and I doubt whether they should in fact be deemed genera, or have a different place allotted them." And in his First Lines he observes, "I am disposed to believe, that the synochus arises from the same causes as the typhus, and is therefore only a *variety* of it." To me it appears rather to arise from the same causes as the cauma, for it commences with the cauma-type. The proper rank for all of them appears to be that of species; and the present system in the text-book, in allotting them this character, steers just a middle course between Dr. Cullen's actual arrangement and his real opinion. And in this view it is distinctly regarded by Dr. Stoll, who sometimes describes it as an inflammatory fever assuming a putrid guise; sometimes as equally inflammatory and putrid; and sometimes as an inflammatory fever passing into a saburral fever*. By Kausch, and other German pathologists, it is hence denominated febris inflammatorio-putrida†. It is, in many instances, the inflammatory typhus of Dr. Armstrong.

GEN. IV. SPEC. III. Enecia synochus.

Supposed by Cullen to be a variety of typhus,

but is rather more nearly related to cauma;

whence denominated febris inflammatorio-putrida.

Occasionally it shows a considerable tendency to terminate its course abruptly by a critical sweat; it is sometimes peculiarly marked with yellowness of the skin; sometimes with great stupor of the head; and sometimes with inflammatory tension of the peritonæum. And it hence furnishes us with four varieties:

Varies in course and symptoms.

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* Rat. Med. iii. p. 97. 106. 113. iv. 61.

† Gruner Almanach, 1788, p. 37.

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| GEN. IV. SPEC. III. Enecia synochus. | α Sudatorius. Sweating synochus. | Carried off by a critical sweat in an early stage of its progress. |
| | β Flavus. Yellow synochus. | With yellowness of the skin, attended with a sense of burning heat. |
| | γ Soporosus. Comatose synochus. | Accompanied with stupor from the beginning. |
| | δ Puerperarum. Puerperal fever. Childbed fever. | Accompanied with an inflammatory tenderness of the belly: mostly occurring on the third day after childbirth. |

General character.

The symptoms of the FIRST VARIETY open with great violence. There is usually an intense pain in the head,

α E. Synochus sudatorius.

with a vehement vomiting and purging, which is rarely removed, and sometimes augmented, by an emetic: the skin is peculiarly dry and hot. The balance of the circulating system is here greatly disturbed, and there is an evident determination of blood to the head, and probably to the liver. Like the yellow fever, it rushes forward rapidly to a state of great sensorial debility; and is best

Treatment.

checked in its progress by a free use of the lancet, which more than any thing else takes off the tendency to congestion, and the hardness from the pulse. A diaphoresis commonly breaks out soon afterwards, which proves critical, and should be maintained by diluent drinks, and small doses of antimonials or other relaxants.

β E. Synochus flavus. General character.

In the YELLOW-TINGED SYNOCHUS there is a high degree of hepatic irritation, and consequently an excessive secretion of bile, part of which is resorbed and carried into the system: whence Galen denominates it *synochus biliosus**. It is found chiefly in the summer season, among young persons of a bilious habit, and is generally produced, like the genuine cauma, by too violent exertion under a sultry sky. It is accompanied with intolerable thirst and sleeplessness. In few words, it is a causus, or ardent

* De Differ. Febr. cap. ii. De Crisibus, cap. ii.

fever without any apparent remission; its symptoms, with this exception, are the same, and the same mode of treatment is demanded: for which the reader may turn to the second species of the preceding genus. GEN. IV. SPEC. III.

γ E. Synochus soporosus.

While the symptoms rage violently, there is sometimes a great determination to the head, with a sudden exhaustion of sensorial power; and hence, notwithstanding that this local affection is more severe and confirmed than in the first variety, there is a dull and obtuse, rather than an intense and pungent pain. It is the SYNOCHUS SOPOROSUS of Guarinon and Sauvages, as well as of the present system; and the continual fever of Sydenham for the year 1763. Among the chief symptoms, says he, was a coma, for the patient soon became drowsy and obscurely delirious. Occasionally, however, it was a direct lethargy, which continued for two or three weeks, during which nothing but a violent noise would rouse the patient; when after opening his eyes, and being persuaded, perhaps, to take a little food or some medicine, he again fell into a sleep so profound, that Sauvages calls it a febrile cataphora. In some cases, however, instead of a lethargy, there was a low muttering delirium, in which the patient spoke incongruously and with fretfulness, with short snatchings of stertorous sleep interposed. The fever rarely terminated in less than fourteen days; and, when the lethargy prevailed, generally ran on to twenty-one or even thirty days. The first symptom of recovery was usually a capricious longing for some absurd kind of meat or drink. The head for many days still discovered great weakness, and even the muscles were incapable of supporting it in an erect position. Warm cordials were always mischievous: a free and repeated use of the lancet, with brisk purgatives, formed the best plan of cure, with diluting diaphoretics afterwards. Sauvages asserts, that blistering the head was serviceable. Epithems of ice-water over the whole head, repeated as soon as they became warm, would probably have proved far more beneficial, as soon as the vessels of the head had been sufficiently emptied.

Sydenham's description.

Treatment.

δ E. Synochus puerperarum.

We find the same fever still more frequently commencing with a like tendency to the peritonæum, instead of to the head, and running rapidly into a state of inflammation, with an imperfect attempt at suppuration; and especially where

Proceeding from, or

GEN. IV. SPEC. III. } E. Synochus puerperarum.

this membrane has been excited by a sympathetic action with the uterus or any other adjacent organ, or by exposure to the atmosphere in consequence of a wound through the abdominal integuments. And hence this disease occurs occasionally in cases of tapping for a dropsy of the abdomen, and still more frequently after labour: on which account, it is commonly known by the name of PERITONÆAL, PUERPERAL, or CHILD-BED FEVER. From the days of Hippocrates to those of Boerhaave and Van Swieten, the uterus was supposed to be the chief seat of inflammation when the disease arises from this cause. But there is now no question, that it originates in the peritonæum itself, and that the uterus is often very little affected; and this too, though the inflammation should spread, as it often does, to other organs in the vicinity.

combined with, peritoneal inflammation.

Uterus supposed formerly to be the chief seat of the disease.

The disease usually commences on the second or third day after delivery, or a wound made through the abdominal integuments by accident, or in tapping for a dropsy of the abdomen; though sometimes it occurs rather later, and, according to Professor Frank, sometimes a little before delivery*. [Dr. Blundell mentions in his lectures, that he has known death occur, with all the symptoms of puerperal fever, within the first four-and-twenty hours after parturition; and Dr. Haighton used to relate the case of a woman, who died of a puerperal fever, which commenced ten or twelve days after delivery. According to Dr. Blundell, the later the attack, the less is generally the pertinacity of the symptoms.] It is marked by all the common symptoms of a severe febrile incursion, in combination with the tenseness and tenderness of the belly. The muscles of the back and hips are in great pain; the abdomen is tender, often acutely painful, and the pain is greatly increased by pressure, which peculiarly distinguishes this disease from enteritis; and as the diaphragm is affected by contiguous sympathy, the breathing is also short and laborious, accompanied with most distressing anxiety. [In puerperal fever, the pulse is noted for its extraordinary frequency. Dr. Blundell says, that it is scarcely ever below 115 in a minute, unless the disease be yielding to remedies;

Description.

Great frequency of the pulse.

* De Cur. Hom. Morb. tom. ii. p. 189. 8vo. Mannh. 1792.

and more commonly it rises to 120, 130, or 140; and he has counted pulses of 165 or 170.] The head rarely suffers much at first; but, in the progress of the disease, is apt to become stupid and comatose. The flow of the milk and of the lochia are usually suspended, though the latter is not always so; but, in this last case, the discharge is thinner and more acrid. The stomach is sometimes, but not generally, troubled with sickness, and frequently discharges an offensive porraceous saburra; and a troublesome diarrhœa attacks the bowels.

Gen. IV. Spec. III. § E. Synochus puerperarum.

The disease appears also at times, and by practitioners of deserved credit, to have been confounded, not only with enteritis, but with *simple irritation of the bowels*, produced by a retention of scybala, indurated feces, or some other cause. In this last case, however, the abdominal tenderness is usually less diffuse, and, in the commencement of the disease, the pulse less disturbed, and the head more disposed to be affected. There is also a pretty full proof exhibited by the immediate and very sensible relief afforded by purgatives, and the very small benefit obtained by bleeding. Though there can be no question, that, if such intestinal irritation be suffered to continue, it may in the end prove as perilous as peritonitis itself, and even excite inflammation of the peritonæum, or intestines, or both.

Sometimes confounded with simple irritation of the bowels.

To account for the inflammation of the peritonæum, it is only necessary to recall to mind the readiness with which, in particular constitutions, or states of excitement from various internal or external causes, inflammation often takes place in interior cavities, and the rapidity with which it spreads over every part of them. It is to this principle alone we trust in effecting a radical cure for a dropsy of the tunica vaginalis of the scrotum. The cavity here is small, and we are not afraid of serious mischief; but were it as large as that of the peritonæum, he would be a bold operator who should venture upon a like mode of cure, notwithstanding that the process of adhesion, so much more easily effected in the scrotum than in the abdomen, might diminish the chance of danger.

Inflammation of the peritonæum accounted for.

Principle to be attended to in effecting a cure.

In the opinion of Mr. John Hunter, the disease takes place in consequence of an injury done to the peritonæum, as forming a cavity, by which its present state is either suddenly changed or rendered imperfect. The injury, done

Explanation given by J. Hunter.

GEN. IV. SPEC. III. § E. Synochus puerperarum.

to the peritonæum in the case of women after delivery, he ascribes, as his sentiments are delivered by Mr. Cruikshank, to two causes. Sometimes it proceeds from a want of disposition in the womb to recover itself after labour; by which the peritonæum, as a cavity, must necessarily be affected. At other times from a too sudden emptying of the abdomen; whence the peritonæum cannot always recover itself so as to be properly adapted to its new condition. This last cause, he observes, may also hold with men after the operation of the paracentesis. But, in them, besides the sudden emptying of the abdomen, there is the additional circumstance of a wound, which renders the peritonæum, as a cavity, imperfect. When an inflammation of the peritonæum occurs, it most frequently happens, as he still farther remarks, that it spreads over all the cavity of the abdomen. An extravasation of fluids takes place into that cavity, mixed with pus. The different viscera adhere by their peritonæal coats. The intestines are distended with air. And the irritation, thus induced, kills the patient long before granulations or an obliteration of the cavity in the second method can occur*.

These causes rarely adequate of themselves.

Neither of these two causes, however, by themselves will often, if ever, produce the fever before us, or even peritonæal inflammation alone. For the uterus is perpetually exhibiting a morbid enlargement, without a disposition to recover itself: and the abdomen, sudden evacuation, while no such fever ensues. There must co-operate a peculiar temperament, or a peculiar condition of body at the time; and, in puerperal patients, there is especially the general pyrectic excitement which necessarily follows the very great change in various organs after delivery, and the transfer of accumulated action from one organ to another.

A peculiar temperament of body necessary as an accessory.

A peculiar temperament of the atmosphere.

Another accessory is also frequently found in the constitution of the atmosphere; for whatever change is most calculated to produce fever from a morbid excitement of the abdominal viscera, cannot fail to co-operate in the production of this disease from a local cause. I have already observed, that such a change most usually occurs in autumn, and have stated the grounds on which it depends, under

* Edin. Med. Comment. vol. iii. p. 322.

the history of *epanetus autumnalis*, to which the reader may turn at his leisure*. And hence, so far as I have observed, a tendency to peritonæal or puerperal fever occurs more frequently at this season, than at any other: and, on this account, it is said by Dr. Douglas, of Dublin, M. Vandenzande †, Dr. Blundell, and some other writers ‡, to happen occasionally as an epidemy §. There is much reason, indeed, for regarding it in this last view; for as most of the auxiliaries that unite in the production of contagious miasm are present in a lying-in chamber, such miasm is frequently the result; often indeed, as we have reason to believe, generated after the manner of typhous miasm, and completely elaborated in the circulating and secreted fluids of the patient herself. Of this fact, indeed, we seem to have a striking illustration in the official report of the malignant puerperal fever that raged so fatally in the lying-in department of the General Hospital at Vienna in 1819 ‖; but there can be no longer any question, after the accounts of the disease published by Dr. Gordon of Aberdeen, and Dr. Young of Edinburgh, as it appeared in the lying-in infirmaries of these cities; in which woman after woman continued to be infected to a very great extent, and especially where they had close communication with puerperal patients, or had even been attended by nurses or midwives, who had previously attended the latter without sufficiently changing their malignant dress. This disease was only subdued by the ordinary means employed to exterminate contagious miasm, such as great cleanliness, repeated change of sheets and body-linen, free ventilation, and a total separation of those, who were labouring under the disease, from those who were about to be confined ¶.

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Hence occasionally becomes an epidemy.

Contagious from miasm generated as in typhus.

Proofs of infection.

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* See vol. ii. Cl. III. Ord. I. Gen. III. Spec. II.

† Observations pratiques sur la Maladie connue sur le nom de Péritonite, et de Fièvre puerperal. Anvers, 8vo. 1821.—J. P. Frank, De Cur. Hom. Morb. tom. ii. p. 197.

‡ Treatise on the Puerperal Fever, illustrated by cases which occurred in Leeds and its vicinity in the year 1809—1812. By William Hey, jun., &c.

§ Clark, Edin. Med. Comment. vol. iii.

‖ Edin. Med. and Surg. Journ. No. 80, p. 83.

¶ Compare Dr. Campbell's Treatise on the Epidemic Puerperal Fever, as it prevailed at Edinburgh in 1821-2. Edin. 8vo. 1822.

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In all kinds of contagious fevers we find, that some persons are more liable to be infected than others from incidental circumstances; and, as I have already had occasion to observe, in laying down the laws of febrile miasm so far as we are at present acquainted with them, the miasmic corpuscles are modified in a few of their properties by the accessories to which they are exposed, or by which they are produced. And by bearing these facts in mind, we shall have no difficulty in accounting for the limitation of this contagious fever to puerperal women, and the exemption possessed by persons who are not under the same circumstances. For, operative as the miasm unquestionably is where the predisposition exists and the abdominal organs are thrown out of the balance of healthy action, it is inert where no such predisposition is to be found, and these organs are in elastic vigour. Dr. Douglas extends this view of the case further than many pathologists; for he conceives that women, whether pregnant or nursing, or for several months after confinement, though not nursing, are susceptible of the disease upon the application of contagion *.

Contagious effects, why limited to puerperal patients.

Facility of acquiring the disease as supposed by Douglas.

But whether the miasm, thus generated, be the common febrile miasm we have contemplated in several of the preceding species, merely modified in its powers by accidental circumstances, or a contagion specific and peculiar to itself, is a question, which, at present, we have not the means of determining.

Whether febrile miasm modified, or a specific contagion.

I have said, that, in the inflammation which takes place, there is an imperfect attempt at suppuration. The fluid secreted or effused is usually a whey-like material, or milky ichor, or, as Mr. Cruikshank has described it, an extravasated matter mixed with pus. But Dr. Hulme† asserts, that he has sometimes found genuine pus apparently secreted without ulceration; and Dr. Meckel informs Baron Haller, that he has witnessed the same very extensively ‡. The nature of the fluid will, indeed, entirely depend upon the vehemence and rapidity of the inflammatory process.

Imperfect attempt at suppuration.

* Report on Puerperal Fever. Dublin Reports, vol. iii. p. 145.
† Treatise on the Puerperal Fever.
‡ Epist. ad Haller. Script. vol. iii.

Where this is less violent, the secretion, as from the surface of other serous membranes, may be purulent or even genuine pus, and has sometimes amounted to several pints; but, where more violent, it will be a milky, caseous, or whey-like serum. It is rarely however so mild and temperate in its march as to produce pus; often running on, as Dr. Hulme has observed, to a state of gangrene at once; and in some instances has been found to involve the intestines, omentum, and all the neighbouring viscera, in the common mischief, as has been abundantly established by post-obituary examinations*. And hence, the uterus itself has sometimes participated in the inflammation, and has shown pus or gangrene, according to the vehemence and rapidity of the morbid influence†. The secreted fluid, from its abundance is called, by Professor Frank "acutus purulentusque hydrops," who further tells us, that he has sometimes traced it in the lungs, pleura, cavity of the chest, and even in the pericardium, where these organs have associated in the inflammation‡.

Gen. IV. Spec. III. § E. Synochus puerperarum. Inflammatory range often very extensive. Frank.

The general treatment of this disease should closely resemble that already laid down for the severer varieties of the malignant remittent, which it very much resembles, with the exception that the fever is continued, instead of being remissive: and that the local irritation is seated in the peritonæum, instead of in the liver or any other organ. This inflammation must be subdued, and that speedily, or the patient will perish; and hence, abstraction of blood and calomel purgatives are the arms on which we have chiefly, if not solely, to depend; and both should be employed decidedly and to as great an extent as we dare.

General treatment.

Eighteen or twenty ounces of blood should be drawn from the arm, as soon as possible after the commencement of the disease, and repeated within twelve hours, if necessary, and the strength will allow: but if venesection have not taken place before the third day, the debility will have gained so high an ascendancy, and the general symptoms put on so putrescent a complexion, that little benefit is to

Venesection.

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* Hulme, ubi suprà. De la Roche, Recherches, &c.

† Bang, Act. Soc. Hafn. I.

‡ De Cur. Hom. Morb. Epit. tom. ii. p. 196. 8vo. Mannh. 1792.

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Treatment.

Cathartics.

be gained from it. The bowels should at the same time be moved by six or eight grains of calomel given in the form of a pill; and the same preparation, to the amount of three or four grains—Dr. Douglas advances the dose to not less than ten grains—should be continued every six hours till the tension and soreness of the abdomen have abated. And it will often be useful to accompany the calomel with one or more doses of castor oil, or the essential oil of turpentine, or both combined.

Calomel.

Dr. Vandenzande depends upon a free exhibition of calomel without venesection, which, after the manner of Dr. Hamilton of Ipswich, he unites with opium; and he boasts of the certainty of success which this treatment has developed; though, in conjunction with opium and calomel, he sometimes employs mercurial friction*. There can be no question of the benefit of a liberal use of calomel in an early stage of the disease: but to let it supersede the use of the lancet, is to abandon our first chance of success, and to encounter an unnecessary peril.

Neither advisable in some cases.

It happens not unfrequently, however, that the patient's frame is so weak and delicate, that we should risk more by drawing blood generally, than even by leaving the case to nature; as it does also that the stomach and bowels are from the first in a very high degree of irritation, with violent purging and vomiting, and will not bear any additional stimulant. Our wisdom is here to yield to circumstances, and let the general rule admit of particular exceptions.

Local depletion.

Opium.

Instead of the lancet, we should have recourse to leeches, and, in this manner, remove twelve ounces of blood at the least; and unite opium with smaller doses of calomel. It does not follow that calomel in such a combination will increase the irritation of the stomach or bowels; I have often seen the contrary; and that by the exhibition of two or three grains with one grain of opium, repeated every five or six hours, the irritation has yielded to the commencement of a new action.

Essential oil of turpentine.

It is also in such cases of extreme debility that the essential oil of turpentine has often been found highly be-

* Observations pratiques sur la Maladie connue sur le nom de Péritonite, ou de Fièvre puerperale, &c., 8vo. 1821.

neficial when employed internally by itself; for while it operates as a mild aperient, it acts as a counter-irritant, and hence directly influences the morbid state of the peritonæum, while the pulse is supported by its stimulant power, and a pleasant moisture is sometimes diffused over the surface. It is in truth, with the exception of camphor, the only cordial we can safely venture to employ. For the purpose before us, the dose should be about two drachms; which may be repeated every two or three hours*. Gen. IV. Spec. III. § E. Synochus puerperarum. Treatment.

Warm and anodyne fomentations to the abdomen are usually prescribed at the same time, and are often found palliative, particularly the essential oil of turpentine, which may be used externally as well as internally; but the common mode of applying them makes the bed wet, and gives great fatigue to the patient. And hence, I have ordinarily prescribed a large piece of folded flannel wrung out forcibly in as hot water as can be borne, to be applied over the whole of the pubes and abdomen, and covered by a broad flannel or linen swathe passed under the loins and folded over the epithem of reeking flannel, which is to remain for many hours, or till it becomes dry, as all that is wanted in this application, as in a common bread-and-water poultice, is warmth and moisture; the flannel answers the purpose as well as the bread; and whilst I do not recollect a single instance, in which this application has not been soothing and serviceable, I have never met with a case in which a chill has been complained of. Fomentations. Best and simplest mode of application.

In the mean time, a diapnoë, or breathing perspiration on the surface, should be attempted by small doses of ipecacuan, or Dover's powder, and with the addition of a solution of acetate of ammonia; and if the debility be very considerable, we may employ free doses of camphor, beginning with half a scruple, and proceeding to half a drachm at a time, every four or five hours, with great advantage. Diaphoretics.

If this plan should not answer, and the skin be still hotter, drier, and more pungent to the touch, the pulse quicker and more wiry, and the tongue more deeply furred, it Camphor.

* See Edin. Med. and Surg. Journ. 1822, p. 538. Communication from Dr. Hy. Paine.

GEN. IV. SPEC. III. § E. Synochus puerperarum.

Treatment.

Cold epithems to the abdomen instead of warm.

may be advisable to exchange epithems of hot for those of cold or even ice-water, as already recommended in cases where the head is chiefly affected, instead of the peritonæum. I freely confess that I have not tried this plan myself hitherto, but it is strongly recommended by Loeffler and other physicians of great repute; and as it is a practice in common use in our own country in the case of flooding, without any evil resulting from it, we have no reason to expect any harm from it in the case before us; for the sensibility is here still more obtunded than in flooding, and nearly as much as in deliquium.

# CLASS III.

# HÆMATICA.

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## ORDER II.

## PHLOGOTICA.

### *INFLAMMATIONS.*

FIXED HEAT AND PAIN OR SORENESS; INCREASED SECRETION; LESION OF A PARTICULAR PART OR ORGAN; MOSTLY ACCOMPANIED WITH FEVER.



THE diseases, comprised under this order, are sometimes called Local Inflammations; as the term General Inflammation is, by a few writers, and particularly by Dr. Fordyce, applied to Cauma or Inflammatory Fever. In the present text the ordinal name made choice of is PHLOGOTICA, from φλέγω, "incendo," "ango." Linnéus employs *phlogistica*, from the same root; but as the chemists have long since laid hold of phlogiston, and the term, though lately disused, has a chance of being restored, the derivative PHLOGOTICA seems preferable. Dr. Cullen has PHLEGMASIÆ, after Galen and Sauvages; but as *phlegmasia*, and *phlegmatic*, from the same source, import, in common medical language, a very different and almost an opposite idea, the author has also purposely passed by this term in order to prevent confusion. The nature of the fever, accompanying the inflammation, cannot enter into the definition; for this will vary with the nature of the inflammation itself, and not unfrequently with the structure of the organ.

The species sometimes called local inflammations.

Phlogotica, why used as the ordinal term.

Nature of the fever depends upon that of the inflammation.

When an inflammation takes place near the surface of

the body, there is not only heat and pain, or soreness, but more or less swelling, hardness, and redness, and we hence infer the existence of these last symptoms in inflamed parts which lie beyond the reach of vision.

Inflammation, how ascertained when deep-seated.

In most cases inflammation begins at a point; for, at the commencement, all the local symptoms lie within a very small compass. The spreading of the inflammation is owing to continued sympathy, the surrounding parts participating with the point of irritation; and in proportion to the health of the surrounding parts and constitution, this sympathy is less.

Origin and progress of inflammation.

The act of inflammation seems to consist in an increased action of the vessels; mostly, if not altogether, of the extreme vessels; for wherever inflammation appears, it may be confined to a point, in which none but the smallest vessels can exist. Independently of which, we have already had occasion to observe, that the capillaries are endowed with the property of contractility, and consequently are more capable of sustaining the phenomena of inflammation, than the arterial trunks.

Mostly begins in the capillaries, and why.

Commences as a blush;

The first act of the vessels when the stimulus which excites inflammation is applied, Mr. Hunter supposes to be precisely similar to a blush; and to consist in a simple distention or increased diameter beyond their natural size; such as we see takes place on the application of a gentle friction, or of gently stimulating medicines, to the skin; and the consequence of which is a warm glow, when limited to the degree we are now supposing; but which, if carried farther, would be followed with excoriation, suppuration, and ulceration.

and is accompanied with a gentle glow.

Coagulating lymph is next separated:

The inflamed vessels, being thus enlarged and irritated, begin to separate from the blood they contain some portion of its coagulating lymph, together with some serum, red globules, or whatever other fluid the vessels may be loaded with; and to throw these materials out on the internal surface of the part inflamed; probably through the exhalants, or, perhaps, through new vessels which may be now forming around them; whence the sides of the cellular membrane, which receive the effusion, become covered with it, unite with the opposite sides with which they are in contact, and thus form the first foundation of adhesions. "It appears," says Dr. Lucas, "that whenever the vessels

and produces adhesions, together with increased bulk:

act with unusual force, there is a tendency in the coagulating lymph to separate from the other constituent principles of the blood; by the effusion of which, as the most sanguineous part of the blood, it is probable that the circulation of the remaining part is facilitated, independent of the relief obtained by the diminution of volume*." We may at least hereby readily account for much of that diminution of pain which often takes place while the swelling still continues, or is even augmented. The increased bulk of an inflamed part is produced chiefly by this effusion; and the increased redness, partly by the larger quantity of blood contained in the distended old vessels, and partly by the production of new vessels formed out of the coagulable lymph thus extravasated; and which, by innumerable inosculations and adhesions, interpose a check to suppuration, which would otherwise most probably take place.

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and new vessels.

Inflammation, therefore, consists in an increased impetus and accumulation of blood in the vessels affected, accompanied with a proportionate swelling and sense of heat. The pathologists have pretty generally concurred in ascribing this accumulation of blood to an obstruction of some kind or other; but they have differed upon its nature and origin; and have not been able to determine whether it be dependent upon the crasis of the blood itself, or the resistance of the vessels that contain it.

Hence inflammation, increased impetus, and accumulation of blood.

Accounted for by an obstruction.

Generally speaking, however, it has, by all the schools of medicine, been ascribed to whatever has been supposed to be the proximate cause of fever: and hence the humoral pathologists attributed it to a lentor or viscidity of the circulating fluid; and the corpuscular, to an error loci, concerning both of which we have already treated; the cause of obstruction, in the view of either hypothesis, being seated in the nature or misdirection of the constituent parts of the blood itself: while Dr. Cullen refers it to the same kind of spasm which he regards as the proximate cause of fever; and hence derives the obstruction from a constrictive resistance in the vessels of the part affected: which, he farther supposes, forms but a mere link in the tensive

Proximate cause of obstruction explained variously.

Doctrine of the humoralists:

of the corpuscularians:

of Cullen.

* On the Principles of Inflammation and Fever, 8vo. 1822.

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chain of a phlogistic diathesis, which more or less runs through the entire habit at the time of inflammation, and constitutes the predisposition to its rise and progress.

"That a spasm," says he, "of the extreme vessels takes place in inflammation, is presumed from what is at the same time the state of the whole arterial system. In all considerable inflammations, though arising in one part only, an affection is communicated to the whole system; in consequence of which an inflammation is readily produced in other parts besides that first affected. This general affection is well known to physicians under the name of *diathesis phlogistica*. It most commonly appears in persons of the most rigid fibres; is often manifestly induced by the tonic or astringent power of cold; increased by all tonic and stimulant powers applied to the body; always attended by hardness of the pulse; and most effectually taken off by the relaxing power of blood-letting. From these circumstances it is probable, that the diathesis phlogistica consists in an increased tone or contractibility, and, perhaps, contraction, of the muscular fibres of the whole arterial system *."

Objections to the first two hypotheses.

To the first two of these hypotheses the same objections apply, that we have already seen apply to them as causes of fever. That an error loci occasionally takes place, or, in other words, an entrance of red or other particles of blood into minute vessels to which they do not naturally belong, is unquestionable; but then this is rather a secondary, than a primary link in the chain of inflammation, and consequently an effect, rather than a cause.

Yet the hypothesis of Dr. Cullen does not seem to be more satisfactory, and is especially open to the two following objections, to say nothing of various minor difficulties with which it is attended.

Objections to Cullen's hypothesis.

It supposes, in the first place, as a general rule, that inflammations of every kind, however minute and circumscribed, are dependent upon a particular habit of body at the time, distinguished by the name of a phlogistic diathesis. But we see inflammations occurring in habits of every kind, and varying in many of their features accord-

* Pract. of Phys. vol. iv. sect. ccxlvii.

ing to the variety of the habit; and we see them also arise in individuals who have no such phlogistic habit or diathesis as is here referred to. And we often, moreover, see examples of this very diathesis operating upon individuals for years, without producing any such effect as inflammation in particular parts. And we cannot, therefore, regard such a diathesis as a proximate cause of inflammation in general, though it may often be so of a particular kind of inflammation. Dr. Cullen, indeed, was aware of this difficulty, and even admits it. "Such a state of the system," says he, "seems often to arise and subsist for some time without the apparent inflammation of any particular part; but such a state of the system renders it *likely* that a spasm *may*, at the same time, readily arise in any of the extreme vessels, and a particular inflammation be there produced. It does, however, appear, also, that the general diathesis frequently arises from inflammation begun in a particular part*."

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Its incongruity.

Difficulty in his own explanation admitted by Cullen.

Now, this is not only to admit the difficulty, but to fall prostrate before it. It is to admit what at once settles the entire question. The cause and the effect are made to change places: and the phlogistic diathesis is as broadly stated to originate from inflammation in a particular part, as inflammation in a particular part is stated to originate in the phlogistic diathesis.

But, secondly, this hypothesis seems not only to be chargeable with incongruity, but to be directly at variance with the ordinary train of phenomena by which inflammation is accompanied. That the habit here alluded to, under the name of diathesis phlogistica, exists, and that very frequently, is not to be questioned; and Dr. Cullen has very lucidly described what is ordinarily meant by it. "It seems probable," says he, "that the diathesis phlogistica consists in an increased tone or contractibility, and, perhaps, in an increased contraction, of the muscular fibres of the whole arterial system;" "it appears most commonly in persons of the most rigid fibres." But I believe it will be found by every one who investigates the subject, that, so far from this being the habit

At variance with the common phenomena of inflammation:

* Loc. citat.

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of body in which inflammation is most frequently to be met with, it is that in which it occurs more rarely than in many others. That it occurs in it at times is unquestionable; for, inflammation under some form or other occurs in habits of every kind: but if we look for specimens of larger or smaller inflammation, of deep-seated or superficial, nay, even of suppurative or ulcerative, we shall meet with them, if I mistake not, far more generally in constitutions marked by mobile and irritable, than by firm and rigid fibres; in habits characterized by atonic, rather than by entonic action. It is not till the constitution has been broken down, and the liver rendered feeble and torpid by the influence of a tropical sun, that hepatitis makes its appearance in its ordinary course of attack; phthisis occurs in relaxed and delicate, and not in hardy and robust frames; psoas abscess, peritonæal inflammation, struma, and those vast formations of pus which are sometimes found in parabysmic tumours or physconies, for the most part follow the same track; while the best, if not the only remedy, for the innumerable host of erythematic inflammations, whether erysipelatous, gangrenous, or vesicular, pernio or intertrigo, is to raise the part or the constitution to that scale of vigour, the reduction of which is well known to form a common predisposition to all of them. [The doctrine, that erysipelas is necessarily connected with debility, and that its treatment always essentially requires tonic remedies and stimulants, is one that was generally prevalent about fifty years ago, and still continues to influence the precepts of particular schools. From the foregoing passage, it appears that Dr. Good entertained a similar belief; but, though erysipelas sometimes occurs in debilitated subjects, and sometimes, by the severity of its course, reduces the patient to a state requiring tonics and stimulants, just as other inflammations do, experience proves, that its existence is not inseparably connected with weakness; that, on the contrary, it frequently takes place in strong, young plethoric constitutions; and that it is often most benefited by bleeding and other antiphlogistic measures. On this point, the writings of Mr. Lawrence will tend to dispel a great deal of prejudice; and the Editor feels pleasure in making this observation, on account of his having declared himself to be no admirer of the early and extensive in-

which occur more frequently in atonic than entonic habits.

cisions, which are recommended in that author's paper on erysipelas*.] That there may exist such a condition of body as an inflammatory diathesis, or a predisposition to inflammatory action of some kind or other, according to the idiosyncrasy or established habit, or some controlling accident, is unquestionable; but such a diathesis cannot be made synonymous with the phlogistic diathesis as described by Dr. Cullen, unless there be but one kind of inflammation, and that such an inflammation as has a natural and necessary relation to the entony and rigidity of fibre which are here presupposed.



Summary of what is known upon the subject:

The little that we know upon the subject may, perhaps, be comprised in a few words: the standard of firm health is the best guard against inflammations of every kind, or the state in which a man is least susceptive of them; and a deviation in either direction, whether towards a habit of entony or of atony, capacifies him for breeding them. But it does not capacify him equally; for, in the latter case, they are produced far more easily and generally, than in the former.

In both a peculiar susceptibility of irritation.

And as in weak parts or habits a peculiar susceptibility of irritation seems to be a necessary adjunct in the production of inflammation, it is possible that it may be equally necessary in the opposite state of excessive firmness and rigidity of fibre; since this also will, at times, continue for years without giving rise to any inflammation whatever, and seems equally to demand an exciting accessary. And hence the real inflammatory or phlogistic diathesis, constituting however a remote, more properly than a proximate cause, is perhaps to be found in increased irritability of the living fibre, rather than in an increased rigidity and vigour.

Chief difficulty in reconciling an increased size of the vessels with increased action.

The great difficulty in the subject is that of reconciling the increased action, which seems to take place in the vessels of an inflamed part, with the general intumescence of such part, and, as is commonly conceived, the augmented diameter of the inflamed vessels themselves; since the ordinary effect of increased arterial action seems to be that of an increased contraction, and consequently a diminished

* See Med. Chir. Trans. vol. xiii.

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diameter of the affected vessels, which would lead to an extenuation, rather than an enlargement of the inflamed part. And hence a directly opposite view of the subject has been taken by many pathologists of deserved authority in our own day, who have regarded the proximate cause of inflammation as consisting in a *decreased*, instead of an *increased* arterial action, and consequently as evincing a lower, instead of a higher degree of contractility. Upon this hypothesis, the inflamed arteries give way too readily to the impetus of the blood from the heart, and the part affected becomes swollen from the excess of blood that flows into it, and acquires additional heat and redness from the same cause.

Hence an opposite hypothesis, which supposes a decrease of arterial action.

This hypothesis plausible at first sight:

There is something highly plausible in this explanation; and those who wish to trace it further may find a very neat and interesting statement of it in Dr. Bostock's valuable Elementary System of Physiology*. It was first advanced by Vacca, an Italian physiologist, about the middle of the last century, and has since been supported by Mr. Allen in his lectures at Edinburgh, by Dr. Parr, Dr. Wilson Philip, Dr. Thomson, and Dr. Hastings.

and ably supported.

But only plausible at first sight.

I have said that there is something highly plausible in this hypothesis *at first sight*. Beyond this, however, its plausibility does not proceed; and hence these respectable authorities, while they agree in the main principle of diminished action of the capillary arteries, differ widely concerning the actual state of the vessels, and particularly upon the question whether the velocity of the fluids they contain is diminished or accelerated. Let these effects, however, be as they may, the hypothesis, as it appears to me, equally fails in accounting for the heat, and the soreness or pain, which are essential characters of inflammation, and which accompany it from its commencement.

Insurmountable objections to it.

Does not account for the chief symptoms.

As those of increased heat,

The augmented heat is accounted for by the accumulation of a larger proportion of blood. But a mere accumulation of blood can produce no such effect. Its natural temperature is 98° of Fahrenheit, and, however it may be congested, it cannot, without some other change, give forth a heat of 99° or 100°. In the exercise of walking or

* Vol. i. p. 420. 8vo. 1824. Also Thomson's Lectures on Inflammation.

running, the increased heat produced is the result of increased action; and so far from being that of increased accumulation of blood, the heat continues to augment as the blood, in conjunction with the other fluids of the body, continues to diminish. The soreness or pain is ascribed to the distention. But distention in vessels or organs of any kind that are in a state of relaxation, and possess little contractility, produces no pain or soreness even when carried to an extreme; while in the case before us these symptoms, as just observed, show themselves from the first, and are even most severe when the distention is least of all.

and pain or soreness.

But independently of these objections, both the exciting causes and the treatment of inflammation seem far better to coincide with the idea of redundant, than of defective action; and the case upon this point is put so candidly by Dr. Bostock, that the reader will thank me for substituting his words for my own. "All those circumstances," says he, "which we are usually in the habit of considering as stimulants excite inflammation; and where the same effect is brought about by sedatives or by agents of a more powerful operation, still we can generally perceive the existence of what has been termed re-action, which is the immediate precursor of the change in the state of the circulation. In the same way, the remedies for inflammation appear to me to be more adapted to remove or relieve an excess than a defect of vital energy, as for this purpose, except under peculiar circumstances, we always apply either direct or indirect sedatives, and find stimulants to be as injurious as the others are beneficial. For these considerations, I am induced to recur to the former idea of increased action being the proximate cause of inflammation, or at least as being essential to it, and to inquire whether there be no correct method of combining a state of increased action with distention of the vessels*."

Other objections by Bostock.

In the prosecution of this inquiry Dr. Bostock observes, that the distention must be produced by an obstruction of some kind or other, and he suggests that the cause of such obstruction may be derived either from the contained fluid,

Suggestions for explaining away the difficulties attendant on increased action.

* Elementary System of Physiology, p. 426.

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or the containing vessels. The first he seems to think may be produced by an actual increase of fibrin, or a greater tendency in its usual proportion to coagulate, occasioned by the inflammatory action itself; or by some new arrangement in respect of sanguineous globules, so that they may coalesce, or be more strongly attracted together. And the second may spring from a relaxation in the minute arteries, augmented in proportion to the vigour of their contraction, so as to admit the fibrin and the globules of the blood into vessels which have hitherto been impervious to them, where they must necessarily become impacted from a vis à tergo on the one hand, and the decreasing diameter of the minuter vessels opened into on the other.

Additional explanation in proof that distention must follow upon the common hypothesis of increased action.

Future experiments and inquiries may find no small degree of truth in the one or the other of these suggestions. But it should not be forgotten, that increase of action by no means necessarily imports increase of strength, and that the motific or contractile power communicated to the muscular fibres never flows, even in a state of health, in a continuous or interrupted tenor, but with an alternation of jets and pauses. Upon this subject we shall treat at some length when examining the morbid actions of the nervous system, as well in the Proem to that class as under several of its subdivisions, particularly the genus CLONUS or CLONIC SPASM*; where we shall show that in weakly habits, in which a morbid increase of nervous action must frequently take place, the more violent the jet, and consequently the contractile effect that ensues, the more prolonged and complete the alternating pause, and consequently the relaxation in the same fibre; excepting in cases of rigid or entastic spasm, which will be explained in its proper place. And hence the very fact of increased contraction paves the way for a subsequent and alternating dilatation, and this too in proportion to the violence that the contraction exhibits; since the stream of nervous power, thus communicated by jets from the sensorial fountain, is expended instantaneously and before the next supply arrives. This must be the result in all cases of inflammation, whether the part affected, or the whole constitution, be in a state of atony or of

The contraction of muscular fibres not continuous but with alternate pauses.

Such pauses or relaxations more prolonged and obvious in debilitated organs:

* Cl. IV. Ord. III. Gen. II.

entony. But as we have already shown, that inflammation far more generally takes place in the former than in the latter; and as we have shown also, that the capillary vessels in which inflammation seems to commence, are endowed with a far higher proportion of contractile power than the larger arteries, it must follow, that the morbid irregularity of action which exists of necessity in the vessels of an inflamed part, by such sudden and alternate exhaustions of contractile power, and consequently such intervening periods of rest and relaxation, must lay a foundation for distention; the posterior current of blood now rushing forwards almost without resistance into the inflamed part; where, also, it must accumulate, as, in the same vessels, beyond the inflamed limit, there is no such morbid rest and relaxation, and consequently a continuance of the uniform resistance of a healthy state. And when to these facts we add also the necessary intermission of the globular and larger corpuscles of blood into vessels whose ordinary diameter is too small to receive them, we can be no longer at a moment's loss to account for the phenomena of an enlargement of the inflamed vessels and a distention of the inflamed part.

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the more common condition of inflamed parts.

Capillary vessels peculiarly subject to such increased alternations, and why.

Hence the difficulty solved.

[From the experiments and microscopic observations of Dr. W. Philip, Dr. Thomson, and Dr. Hastings, it appears, that in inflammation the small vessels, veins as well as arteries, are dilated. The increased action of the minute arteries, so generally and vaguely spoken of as the cause of inflammation, may be a convenient expression; but, when it is to be employed for the purpose of really illustrating the nature of inflammation, an exact definition of its meaning should always precede its use. Thus, if it be understood as implying an alternate increased contraction and dilatation of the minute arteries of an inflamed part, proofs of the fact are wanting. No such motions of the minute arteries in inflammation have ever been seen with the microscope. It was a meaning, also, never entertained by Mr. Hunter; who, when he speaks of the increased action of the arteries in inflammation, appears to signify, amongst other changes, a dilatation of them, attended with a diminution of their contractile or muscular power. Dr. W. Philip's researches lead him also to conclude, that the dilated capillaries are in a debilitated state.]

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Concerning the proximate cause of inflammation, however, there is yet much to be unravelled. Of its remote causes, and a few of its laws, we are in some degree better informed. The remote causes may be contemplated under the three following divisions:

Remote causes.

Accidental violence.

First, some accidental violence applied to a part, so as to make a wound or bruise from which it cannot recover, except by the process of inflammation, or which, at least, has a natural tendency to excite such a process.

Local irritation.

Secondly, some irritation which does not destroy the texture of the part, but merely its natural action; as pressure, heat, cold, blisters, pungent applications, and often fevers of every kind.

Particular disposition to inflammation.

Thirdly, a particular disposition to inflammation, founded, perhaps, as we have just observed, on an irritability in the morbid part itself, and which we often behold in constitutions of the best state of health; affording proof, that the general habit is not, in such cases, concerned in the morbid change. Inflammations from any of these causes will, however, partake of the character of the constitution; and hence proceed kindly or unkindly, according as the constitution is in a diseased or a healthy condition. Yet the general principle of inflammation is the same in all; for we can only contemplate it as a remedial process, an instinctive effort, or exertion of the vis medicatrix naturæ, to bring about a re-instatement of the parts nearly to their natural functions.

Inflammation the same in principle;

yet differs in its mode of action.

Yet, though inflammation is uniformly the same in its principle, it often differs widely in its mode of action, and consequently in its result; for as it has a tendency to partake of the character of the constitution, and especially where it is extensive, according as the constitution is healthy or unhealthy, so will be the nature of the inflammation and the diversity of its progress.

Healthy inflammation.

Healthy inflammation consists probably of one kind alone, and is no farther divisible than into different stages of a restorative action, the effect of an instinctive stimulus, rather than of morbid irritation.

Unhealthy inflammation.

Unhealthy inflammation consists of many species; for, numberless are the diseases that affect the health of the constitution; and consequently that may influence the character of the inflammation, by superadding peculiarities or specific actions of its own:

though it is often affected also by the particular condition of the part in which the inflammation takes place. And hence it is no uncommon thing for particular parts to run into particular inflammations with the character of which the constitution has little concern; such as those that are occasionally found on the skin, particularly the erysipelatous, as they are commonly but not quite correctly denominated, and which we shall presently have to describe under the name of erysipelatous erythema.

Illustrated.

Simple or healthy inflammation is capable of producing three different effects, which, where the whole take place healthily, follow in regular order, and constitute so many stages. These are adhesions of the parts inflamed, suppuration, and ulceration; to which three different effects Mr. Hunter has given the names of the adhesive, the suppurative, and the ulcerative inflammation.

Three different effects of healthy inflammation; adhesive, suppurative, and ulcerative.

There is good reason for this division into different heads; for although, where the whole takes place healthily, they follow in the order now enumerated, yet the whole do not always takes place either healthily or unhealthily, nor is the order thus enumerated in every instance attended to. For pus, as we shall have occasion to observe more largely hereafter, is often produced where there is no adhesive inflammation; and ulceration, where there is neither adhesion nor suppuration: while occasionally the suppurative and adhesive inflammations take place simultaneously; the former being hurried on before the other has completed its own bounds, as is often the case in peritoneal inflammation after child-birth. The degree of violence also, with which the inflammation commences, produces a considerable influence upon these points; and the nature of the parts themselves still more.

Good reason for contemplating it under these three effects as so many states or stages.

With the nature of the parts that constitute the chief fields of inflammation, it is of high importance that we should make ourselves deeply acquainted from the first, that we may be able to determine concerning the particular course the inflammation is likely to run, and regulate our treatment accordingly. And it is of still farther importance that this subject should be attended to on the present occasion, because it is on this distinction of parts, producing a natural tendency to distinct inflammations, that the genera of the order before us are principally constructed.

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Hunter's observations on the subject of high value.

The whole of the observations of Mr. Hunter upon this interesting point are entitled to the most patient study, and cannot be too closely committed to memory. In the present place I can only remark, that, in treating of inflammation, he divides the body into two parts: firstly, the circumscribed cavities, organs, and cellular membrane which connects them; and, secondly, the outlets of the body, commonly called mucous membranes, as the ducts of the glands, alimentary canal, and similar organs. He distributes inflammatory affections, as I have just observed, into three sorts, adhesive, suppurative, and ulcerative.

Adhesive inflammation, where chiefly seated.

Adhesive inflammation belongs chiefly to the former of the above two parts of the body, *where they are deeply seated,* and appears intended to take place for the purpose of preventing suppuration. It applies, therefore, peculiarly to that genus of the present order which we shall denominate EMPRESMA, and which will embrace the visceral organs, allowing for one or two exceptions that are occasionally interposed.

Suppurative, where chiefly seated.

Suppurative inflammation belongs chiefly to the same division of parts *placed near the surface;* and consequently applies to the two genera here denominated PHLEGMONE and PHYMA, embracing small cutaneous abscesses of various kinds.

Ulcerative, where chiefly seated.

The ulcerative inflammation belongs chiefly to the second order of parts, as the mucous and serous membranes and outlets; and hence applies principally to the genus ERYTHEMA, or INFLAMMATORY BLUSH; often, but improperly, called erysipelas, which is an exanthem or eruptive fever, accompanied with erythema. It also applies to that peculiar inflammation which characterises the whitloe, and will be found in the present arrangement under the genus PHLYSIS. Deep-seated suppurative inflammations and abscesses cannot well be placed in either of the genera we have thus far noticed, and have a claim to be considered by themselves. They are hence included in the genus APOSTEMA, with which the order will be found to open.

Often diffusive, and why.

In circumscribed cavities, where, from a peculiarity of constitution, or the peculiar nature or degree of excitement, an inflammation is deflected from its common tendency to produce adhesion, we often find it run on with great rapidity from one part of the cavity to another, till the whole becomes affected. We have already had occasion to notice

this inflammation of the peritonæum*; and we shall have further occasion to notice it in psoas abscess† and acute rheumatism. And we may hence account for the alarming progress of the same morbid action when it attacks the surface of arteries or veins, from an accidental wound, as in venesection, from true aneurism, or from any other cause; of which acute rheumatism seems, at least, occasionally to be one. The French writers, who have studied the subject with considerable attention, are disposed to regard these inflammations as in many instances idiopathic, and have distinguished the former by the name of ARTERITIS‡. But I am not aware of their having hitherto been found to occur otherwise than as concomitants or sequences of other affections.

Arteritis.

Phlebitis; or inflammation of veins.

The inflammation of veins, by some writers called PHLEBITIS, has of late occupied more attention than that of arteries. It is occasionally a result of an irritated varix, and especially where such varix has undergone the operation of removal, as we shall further observe when treating of this complaint§: it has also occasionally followed venesection where the lancet has been affected with rust or some other irritant; and especially where the constitution, or perhaps the vein alone, has been in a state of morbid irritability. And it has sometimes occurred where no distinct cause could be assigned either during life or on dissection afterwards. It is by no means easy, and for the most part altogether impossible, to trace an inflammation of a vein or artery by external signs; for although, in the former, there is sometimes a red streak or two accompanying the general pain and swelling of the limb, and in the latter a more rapid pulsation or throbbing, and in both a line of hardness like that of a cord; yet in various cases nothing of the sort is to be found, and consequently they cannot be regarded as pathognomonic criteria. And on this account the author has allotted no distinctive place or name to these

Accidental causes.

Difficulty of determining these by external signs.

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* Cl. III. Ord. I. Gen. IV. Spec. III.

† Cl. III. Ord. II. Gen. I. Spec. II.

‡ See Enecia Cauma, Cl. III. Ord. I. Gen. IV. Spec. I.; as also Arthrosia Acuta, Cl. III. Ord. II. Gen. XII. Spec. I.; and Cl. III. Ord. IV. Gen. X. Spec. II. Exangia Varix.

§ Cl. III. Ord. IV. Gen. XI. Spec. II.

Class III. Order II. Phlogotica. Exemplified.

affections in the course of his classification; as feeling that to do so would be to make an empty display, and a verbal subdivision unattended with any real use. In a striking case which proved fatal, described by Dr. Duncan, the disease was so little indicated by either the general or local symptoms that it does not seem to have been suspected, and was only accidentally discovered on a post-obit examination. At the time when the symptoms were most aggravated, and less than twenty-four hours before death, when the swelling had extended up the arm, and the pulse was at 120, the limb had an uniform appearance, the intumescence a defined margin, "but still without much redness, heat, or pain, unless in a point at the bend of the arm on considerable pressure, and on the outside of the elbow *." A knowledge, however, of the precise fact could have made little or no difference, nor even can do so, in the mode of treatment; which must uniformly be founded upon the general process for diffuse inflammation, whether more or less complicated in its range.

Inflammation of tendons, lymphatics, fasciæ.

Duncan's diffuse inflammation of cellular texture.

Perhaps too much generalised:

It is on this account that Dr. Duncan has rather chosen to regard such wide-spreading phlogoses, whether of veins, fasciæ, tendons, or lymphatics, as mere modifications of what he has specifically called "Diffuse Inflammation of the Cellular Texture †," which, in truth, is in almost every instance more or less affected, and, in many instances, with gangrenous suppuration that knows no bounds. Perhaps this may be to generalize rather too much, and especially in the case of that very singular and more definite description of inflammation which takes place from contagion absorbed by a sore or wounded part in dissecting, and which the present author will be found therefore to have separated for a particular investigation under the name of ERYTHEMA *anatomicum* ‡; but he is well aware of the difficulty of making even this distinction; and of the tendency there is for the diffuse kind of inflammation we are now considering to run into every form, exhibit every variety of com-

particularly as including erythema anatomicum.

* Case of an Inflamed Vein, Trans. Medico-Chir. Soc. Edin. vol. i. p. 443. 8vo. 1824.

† Ibid. p. 455.

‡ Cl. III. Ord. II. Gen. VI. Spec. V.

bination, be conjoined with every type of fever, and productive of every diversity of danger, from the peculiarity of the general or the local constitution, the influence of the patient's habit of life, or some other incidental predisponent or concomitant.



Inflammation, therefore, is influenced by the nature of the part in which it takes place. It is also, as we have already observed, equally influenced by the nature of the constitution itself; and, thirdly, it is influenced by the nature of the remote cause. And we may add, that, where the inflammation is regulated by the constitution, and the constitution itself is healthy, specific irritants will not change the nature of the inflammation, but only determine its situation, extent, duration, or some other peculiar property. But where the constitution is unhealthy, or predisposed to any particular morbid action, as that of erysipelas, putrid fever, or plague (for some individuals receive even the plague much more readily than others), as soon as the specific virus is communicated, the disease will degenerate into a mixture of both, and discover its double source; it will give proof that a specific inflammation has been set down upon a constitution of a peculiar kind, and will partake of the nature of both. In consequence of which, the specific properties will by no means be so distinct or well formed as if they were to appear in a sound and untainted constitution.

Inflammation, how far affected in its character by incidents.

Not changed by specific irritants in sound habits;

but greatly changed in unhealthy, as are the specific irritants themselves.

Thus, if the constitution have a tendency to fall into a state resembling that of typhus fever, and the small-pox attack it, the inflammation will be that of the small-pox combined with the constitutional disposition to typhus; which will so far affect the action of the small-pox as to interfere with the specific difference of its inflammation. In consequence of which, the pustules will spread, but not suppurate, and assume a livid hue, and perhaps prove fatal; while if another person, possessing an uncorrupt and, so to speak, unbiassed constitution, be inoculated even with this mixed virus, the variolous principle will separate itself from the principle with which it is combined, improve with the improvement of the new soil, and yield a crop of genuine and unadulterated pustules.

Illustrated.

In like manner vaccination is, generally speaking, a specific preservative against the small-pox. But it some-

Farther explained

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from vaccination.

times happens that it is not so, and that the small-pox is caught and makes its appearance many years after vaccination has been performed with all possible circumspection. And it generally happens in such cases, though not always, that a mixed or hybrid disease, a sort of degenerate small-pox of a milder character than the true, is hereby produced.

Application of these remarks to various singularities and apparent anomalies.

The remarks just laid down will furnish us with a clear and sufficient clue to these singular and interesting facts. Some persons have a peculiar predisposition to small-pox, which is by no means easily eradicated, and far less so than in others. Vaccination, which permanently counteracts the predisposition among mankind in general, does not permanently counteract it here. It introduces a new but less rooted diathesis, and the former is rather suppressed than extirpated. In process of time the predisposition revives, re-acquires its anterior influence, and the moment it comes in contact with variolous contagion, subjects the system to small-pox. But while the variolous diathesis is thus again predominant, the vaccine diathesis has not altogether lost its hold; and the disease, as in the preceding cases, is a mixed product of both causes in co-operation, or rather in antagonism. It is small-pox, raised upon a constitution not yet totally liberated from the influence of vaccination; I say, "not yet totally liberated," because we occasionally meet with instances in which the constitution, little open to the impression of the vaccine disease, even when first communicated, becomes in time liberated from its influence altogether, and receives the small-pox, after vaccination, as freely as if it had never been vaccinated, and with a violence that proves fatal in a few days.

Inflammation always shows a tendency to the surface,

even in deep-seated parts.

It is a wise and beneficent law of providence, and affords an incontrovertible proof of the existence of an instinctive remedial power, that inflammation, wherever seated, is always more violent on the side of the inflamed point nearest the surface, and shows a constant tendency to work its way externally rather than internally. This law applies equally to the thorax, to the abdomen, and to parts which lie close to the different outlets of the body. Thus, if an inflammation attack the peritonæum covering an intestine, and adhesions are hereby produced between the two, the inflammatory action works upwards through the thick walls of the abdominal muscles, while the proper coats of the in-

testines in most instances remain sound. This, indeed, is not always the case; for the inflammation may be so violent as to pass in both directions with great rapidity, or some accidental circumstance may force it inwardly; but it is so common as to form a general rule. We see the same thing in the obstruction of the natural passage of the tears producing a fistula lachrymalis; for here the ulceration points externally to the inner angle of the eye, while the inside of the nose defends itself by becoming thicker; so much so, in many cases, as to block up the cavity of the nostril, and produce inosculations with the septum; which has been an occasional cause of failure in the usual operation for this disease*. We even find, that if an abscess form in a frontal sinus from an obstruction in its duct, the matter will rather work its way externally through the frontal bone than descend into the nose. In like manner, if an inflammation attack the cellular membrane on the outside of the rectum near the anus, although the latter be in contact with the inflamed part, the inflammation will extend to the skin of the buttock, while the gut itself is often but little affected.

Farther illustrated by eruptive fevers.

For the same reason, we behold eruptive fevers conducting the specific poisons which excite them, as small-pox, measles, rosalia, or scarlet fever, and even the plague itself, to the surface of the body, rather than throwing them on parts that are deep-seated and vital. The cancer is said to form an exception; but even here the progress of the disease towards the surface is quicker than its progress towards the centre; while syphilis exhibits something of a similar disposition, though not in an equal degree.

Whether cancer forms an exception: whether syphilis.

Hence healthy inflammation a remedial process: illustrated by a brief review of its march.

It appears then that simple or healthy inflammation is a remedial process for restoring a part to soundness when affected by a morbid impression that has a tendency to injure or destroy it; and that the first stage of this process consists in the effusion of a coagulable lymph, which binds the weakened organization into a closer bond of union, creates new vessels, and consequently introduces new life. If this effort do not succeed, and the morbid action still continue its progress, the affected part dies to a certain

* See Hunter on Blood, Inflammation, &c. Part II. Chap. ix.

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extent; but the coagulable lymph, which has been thrown out, and introduced new vascularity around it, still sets a boundary to the destructive career, and prevents it from spreading into the neighbourhood, or at least from spreading as far as it otherwise would do. When, however, a part is thus killed or destroyed, it becomes a substance foreign to the body, and must be removed, and have its place supplied by a formation of new living matter. The process of suppuration, which we shall explain under the genus APOSTEMA, prepares equally for the removal of the dead matter and the formation of that which is to fill up its post. This, however, is the progress of healthy inflammation alone; for, as already observed, in unhealthy inflammation the morbid action will often run on to the ulcerative process or last stage at once; or the adhesive, or the suppurative may intermix with it; or all may imperfectly take place together.

Remedial treatment.

Resolution: its import.

In attempting the cure of inflammation, our first endeavour should be to obtain what has been called a resolution of the general enlargement; or, in other words, a restoration of the part to its state of former health, without the necessity of its going through the entire range of the inflammatory process. And in doing this we are to be guided by the principle of being able to make a new impression upon the part, and to oppose a healthy or remedial to an unhealthy and mischievous action. The nature of the cause must hence be sedulously inquired into; for, till this is ascertained and removed, it will be in vain to expect that resolution can take place, and where we can speedily accomplish such removal, resolution will often follow spontaneously; for the animal economy having a disposition in itself to discontinue diseased action, such action will readily subside upon a disappearance of the cause that maintains it. And hence by taking off the venereal action by the use of mercury, in the case of a bubo, the inflammation will gradually cease, provided no other morbid action has already arisen and united itself with the syphilitic.

When to be attempted.

Resolution, however, is not always to be attempted; for there are many cases in which the attempt would be in vain, and possibly a few in which it would be improper. It is not to be attempted in accidents where there is a considerable exposure of the injured part, and still less in

accidents where the part has been killed by their violence; for in these suppuration is the first natural step to a cure, and we cannot prevent it if we would.

How distinguished from repulsion.

Where inflammation arises from a morbid predisposition in the constitution, and belongs to the description which has been called critical, there is some doubt, and much demand for circumspection: and, in this case, resolution is called repulsion. If the inflammation be really a concentration of the constitutional complaint, which, by being driven from the part fixed upon, may be again diffused over the entire frame, and in waiting to fasten on some other part, it will often be better to encourage its stay. But the determination even in this case must be subject to the two following conditions: first, that the inflammation so concentrated will readily admit of a cure; and, next, that the part on which it fixes is not of vital importance, for otherwise the remedy may prove worse than the disease.

When resolution is determined upon, independently of removing the cause of the inflammation, we may advantageously follow up its effects by all the common modes employed for this purpose, according to the nature of the particular case. The undue degree of action may be diminished by bleeding and purging; the distention by local applications that tend to contract the diameter of the vessels, as cold, and metallic or other astringents; and if along with the distention there should be great pain, narcotics and relaxants will generally be found useful auxiliaries. To these in the present day are often added nausea and vomiting; the former of which operates by lowering the action of the vessels, the latter by giving a tendency to a new action. The nature of the case must determine our choice.

# GENUS I.

## APOSTEMA.

### *APOSTEME.*

LARGE, SUPPURATIVE INFLAMMATION IN A DEEP-SEATED ORGAN; PUS COPIOUS AND CONFINED.

GEN. I.

Import of the generic term among the Greek and Latin writers.

THE term APOSTEMA is Greek, from ἀφίστημι, "discedo," "abscedo,"—whence the Latins employed ABSCESSUS, to express the same general idea. Yet they did not, strictly speaking, apply either abscessus or apostema to every suppurative inflammation, but only to those that were deep-seated, and of considerable extent; chiefly indeed to collections of pus consequent upon fevers, or some previous disorder of particular parts, especially abdominal diseases. This limitation is accurately drawn by Celsus immediately after his description of struma, furunculus, and phyma. "Sed cùm omnes hi nihil nisi *minuti abscessus* sint, generale nomen trahit *latius vitium ad suppurationem spectans.* Idque ferè fit aut post febres, aut post dolores partis alicujus, maximèque eos qui ventrem infestarunt*." The term *abscess* however, which was colloquially used in a loose sense in the time of Celsus, is used so much more loosely in our own day, that it is impossible to recall it to its precise and original meaning. Yet APOSTEMA has not been thus generalized; and it is here, therefore, laid hold of and restrained to the signification expressed in the generic definition; after the authority, indeed, of Sauvages, who has employed it with the same limitation.

How differs from abscess.

Apostema here recalled to its earlier meaning.

The genus apostema in the arrangement before us will be found to include five species: the first of which is common to most fleshy parts, and possesses a common character;

* Lib. v. cap. XXVIII. § 11.

while the remaining four are distinguished by some peculiarity of character, produced by a peculiarity of situation:

| | | |
|---|---|---|
| 1. | APOSTEMA COMMUNE. | COMMON APOSTEME. |
| 2. | ——— PSOATICUM. | PSOAS ABSCESS. |
| 3. | ——— HEPATIS. | ABSCESS OF THE LIVER. |
| 4. | ——— EMPYEMA. | LODGMENT OF MATTER IN THE CHEST. |
| 5. | ——— VOMICA. | VOMICA. |

## SPECIES I.

## APOSTEMA COMMUNE.

### *COMMON APOSTEME.*

INFLAMMATION COMMON TO THE FLESHY PARTS: PAIN OBTUSE: TUMOUR SPREADING EXTERNALLY: TENDER TO THE TOUCH: PUS LAUDABLE: READILY INCARNING WHEN OPENED.

GEN. I. SPEC. I.

Sometimes takes a wide range.

IN whatever part an aposteme is seated, it will sometimes spread to a wonderful extent, and be loaded with a prodigious weight of pus. M. Balme gives us an account of an abscess that extended through the whole parietes of the chest and abdomen on one side, and reached from the scapula to the thigh*; and Hildanus was present, when, upon opening a patient after death, twelve pints of pus were found effused from a visceral aposteme into the cavity of the abdomen†.

Whence this effect.

In all such cases, the first stage of inflammation, that of adhesion, must have been overshot in the violence of the action, or from some other cause, the suppurative and ulcerative have commenced simultaneously from the first. For otherwise the coagulable, or, as Mr. Hunter prefers to call it, the coagulat*ing* lymph thrown forth, as has been already explained, into the cellular membrane in the earliest stage of the inflammation, would have formed a boundary wall by the production of new vessels and reticulations,

* Journal de Médecine, &c. tom. xvii. † Cent. II. Obs. 57.

GEN. I. SPEC. I. Apostema commune.

much nearer to the salient point of the inflammatory action, and confined the secretion of pus to a much narrower limit.

Adhesive inflammation designed to narrow the limits of aposteme.

The secretion of coagulable lymph, and the reticulate adhesion and formation of new vessels which issue from it, is indeed designed, as has been explained already, to prevent the necessity of the suppurative and ulcerative stages of inflammation; and the natural cure of the adhesive stage is by resolution.

Suppurative inflammation only follows where adhesion cannot produce a cure;

When, therefore, an aposteme takes place in a healthy frame, or, in other words, when the inflammation passes into the two ensuing stages of the suppurative and ulcerative, and pus is formed, and a cavity scooped out for its reception, we are to take it for granted that the instinctive and remedial power of nature is incapable of producing a cure by the first intention; that some dead part or extrinsic substance is required to be removed, and that the two ensuing stages of inflammation are had recourse to for this purpose.

for the purpose of removing some dead or foreign substance. How such removal is accomplished.

In the formation, then, of an aposteme in a healthy constitution, we are to suppose, that some part of the organ in which inflammation occurs, as for example, a piece of the muscle of an arm or a leg, is become dead, and an incumbrance to the living parts that surround it, instead of assisting in their office. In effecting, therefore, the important object of a cure, it is obvious that two distinct actions are necessary; the dead part must be carried off, and its part must be filled up by a substitute of new matter possessing the precise properties of the old. And in the process which takes place to accomplish these two purposes, we meet with another clear and striking instance of that wonderful instinctive power which pervades every portion both of the animal and the vegetable world, and which is perpetually stimulating them to a repair of whatever evils they may encounter, by the most skilful and definite methods.

Two distinct actions necessary, so as to carry off the dead part and produce a substitute.

Striking proof of instinctive power. These effects how accomplished.

In order to comply with this double demand of carrying off the dead matter, and of providing a substitute of new, the absorbent and the secernent vessels in the living substance that immediately surrounds that which requires to be removed, commence equally, and nearly at the same time, a new mode and a new degree of action. A boundary [illegible]ne is first instinctively drawn between the dead and use-

less, and the living and active parts; and the latter retract and separate themselves from the former, as though they had been skilfully divided by a knife. This process being completed, the mouths of the surrounding absorbent vessels set to work with new and increased power, and imbibe and carry off whatever the material may be of which the dead part consists, whether fat, muscle, ligament, cartilage, or bone; the whole is equally sucked up and taken away, and a hollow is produced where the dead substance existed.

Apostema commune.

Action of the surrounding absorbents.

While this is proceeding, the mouths of the correspondent secernent vessels from the first, and perhaps somewhat antecedently, commence a similar increase and newness of action; and, instead of the usual fluid, pour forth into the hollow a soft, bland, creamy, and inodorous material, which progressively fills up the cavity, presses gradually against the superincumbent skin, in the gentlest manner possible distends and attenuates it, and at length bursts it, and exposes the interior to the operation of the gases of the atmosphere. From this period the process of incarnation commences: granulations of new living matter pullulate on every side, assimilating themselves to the nature of the different substances that are lost, till the hollow is sufficiently filled up, and the organization completely regenerated.

Action of the surrounding secernents.

On the bursting of an abscess externally, we occasionally find, that a portion of the dead matter still remains, which afterwards gradually sloughs away, or is thrown off by a separation at its base. This is particularly the case in furuncles or boils; and still more strikingly so in large abscesses that include bones, or the tendinous parts of muscles, which are more difficult of absorption, though even these are sometimes absorbed, and completely carried off.

Sometimes a part of the dead matter remains after the abscess has burst.

The attenuation of the superincumbent integuments of an abscess appears to be produced by the stimulus of distention, occasioned by the pressure of the accumulating pus. And it is to the same stimulus that Mr. Hunter refers the absorption of the dead matter itself, conceiving that, for this purpose, the secretion of the pus commences somewhat earlier than the absorbent process.

Process of absorption of dead matter.

GEN. I. SPEC. I. Apostema commune.

The formation of pus, and consequently the existence of an aposteme, is evidenced by a cessation of the pain of distention, which gives way to a throbbing pain, synchronous with the dilatation of the arteries; and by irregular shiverings, and sometimes rigor. After a few days, a weight is felt in the part, the throbbing pain itself subsides, the tumour becomes soft, and, if it point sufficiently towards the surface, fluctuates to the touch.

Commencement of suppuration how evidenced.

Economy of suppuration, by whom discovered.

There is some doubt to whom we are indebted for the first insight into this wonderful process; for it was taught at the same time, or nearly so, on the continent by De Haen, Plenciz, and Schroeder, and in our own country by Hewson, Hunter, Home, Cruikshank, and Professor Morgan; but, upon the whole, Mr. Hewson appears to have taken the lead, and the rest to have followed closely in his steps. Antecedently to which period, pus, instead of being a peculiar secretion, was supposed to consist in a dissolution of the blood-vessels, nerves, muscles, and other solids, in the ordinary exhaling fluid when augmented by effusion; or in a conversion of the serum, thrown forth on the occasion, into the new matter, by a change effected in its gluten during its state of stagnation: the first of which hypotheses was that of Boerhaave*, Platner†, and almost all who practised antecedently to their time: and the second that of M. Gaber‡ and Sir John Pringle§.

Explanation chiefly due to Hewson.

How accounted for antecedently.

These conjectures were ingenious, but they were nothing more; and their errors are sufficiently pointed out in the "Experimental Inquiries" of Mr. Hewson, to whom physiology, and especially the science of morbid anatomy, is almost as much indebted as to any person whatever. He travelled with a comprehensive mind, and a zealous and indefatigable step, in what was at that time new and untried ground; and though he was mistaken in a few points, he correctly explored much, and, by the course he laid down, indicated to his successors the truest methods both of confirming his facts and correcting his misconceptions.

Pus proved by Hewson to be a secretion.

He proved decidedly, that pus is a peculiar secretion, and that it is often, indeed, secreted where there is no ab-

* Aphor. 387.
† Instit. Chirurg. sect. liv.
‡ Acta Taurinensia, vol. ii.
§ Treat. on the Diseases of the Army, App.

scess or breach of surface: and he ingeniously accounted for its production by supposing it to be formed out of the coagulable lymph by a new power, given to the secernent vessels in consequence of the inflammatory action. "And if pus," says he, "in these cases, is produced merely by a secretion, so likewise it would seem probable that even in abscesses, where there is a loss of substance, it is not the melting down of the solids that gives rise to the pus, but the pus being secreted into the cellular membrane from its pressure, and from other causes, *deadens the solids and then dissolves* * them."

GEN. I. SPEC. I. Apostema commune.

The idea of the solids contained in an abscess being deadened and dissolved by the pus which surrounds them, in the ordinary sense of the expression (for in one sense, as will appear hereafter, they may be said to be dissolved), was one of the erroneous opinions of Mr. Hewson to which I have just alluded; and originated from too close an adherence to the earlier and still more mistaken hypotheses we have just noticed.

His view of the subject in one point erroneous.

And hence, with all his ingenuity, Mr. Hewson advanced not much more than half way in explaining the entire economy of suppurative inflammation. It remained for the exploring eye and commanding genius of Mr. Hunter to penetrate through a considerable portion of the remaining half of this curious process, and to prove that the solid parts, contained in the area of an abscess, instead of being deadened by the pressure of the surrounding pus, are dead beforehand, destroyed indeed by the violence of the accident or of the inflammation; and that, instead of being merely dissolved in the circumambient pus, they are absorbed and carried off by a new and increased action of the circumambient absorbents; thus showing, that even ulceration itself, when of a healthy kind, is only another link in the restorative chain of nature, made use of on this occasion.

This point corrected, and the whole explanation improved by Hunter.

Ulceration as well as suppuration a link in the restorative chain.

That pus, instead of being a mere solution of dead animal matter, is a distinct and peculiar secretion, is now known to most practitioners from personal observation, who must have witnessed it repeatedly in situations in which there has been no ulceration or breach of structure,

That pus is a distinct secretion, notorious in the present day.

* Experimental Inquiries, part ii. p. 118.

GEN. I. SPEC. I. Apostema communia.

and consequently where there could be no dead animal matter to dissolve.

Often found where it can be nothing else.

It was noticed in this form by De Haen so far back as the middle of last century; and was pointed out by Mr. Hewson as frequently found, on dissections, on the surface of the pleura, the peritonæum, the pericardium, in a perfectly genuine state.

Still further illustrated.

A very decided case, to which both Dr. Hunter and Mr. J. Hunter were witnesses, was published by Mr. Samuel Sharp about the same time that De Haen first brought the subject before the public. Nothing is more common or more copious than the secretion of pus without ulceration in the first stage of purulent ophthalmy, and in purulent inflammation of the mucous membrane of the urethra; and I remember having attended, about twelve years since, a gentleman in Bedford-row, who had irritated this passage by improperly introducing a bougie into the bladder, and about three days afterwards, discharged with his water not less than half a pint of pure pus, which separated itself from the water, and subsided, and thus gave me an opportunity of examining it minutely. I requested Mr. Cline's attention to this case, and we saw not the slightest reason for suspecting any ulceration whatever.

Singular discharge of pus from the urethra.

Distinctive character of genuine pus.

Genuine pus is peculiarly distinguished by its consisting of white globules swimming in a fluid, which to the eye has the appearance of serum, but possesses characters of its own, equally different from those of serum and of every other secretion we are acquainted with; and which render it coagulable in a saturated solution of muriate of ammonia, which is its specific test. Pus, however, is not globular at its first formation, but a transparent fluid of a consistence in some sort resembling jelly; the globules are produced while it lies on the surface of the sore, usually, when not exposed to external air, in about fifteen minutes after its secernment. The perfection of pus seems to depend upon the large proportion which its globules bear to its other parts. It is specifically heavier than water, and approaches nearly to that of blood. [Professor Brande states its specific gravity to be about 1.030.] It has a sweetish, mawkish taste (apparently from its containing sugar), very different from that of most other secretions. After putrefaction it evinces an acid. Dr. Bruggmans, who has analyzed it with much care, asserts, that it con-

tains an acid also before putrefaction; but this has been denied by Sir Everard Home*. [And it is also mentioned by Professor Brande, that it does not affect vegetable colours till it has been some time exposed to the air, when it becomes slightly sour. He adds, that it does not easily mix with water, alcohol, or dilute acids†.] For a further account of its chemical properties, the reader may consult Dr. Pearson's elaborate paper on this subject in the Philosophical Transactions ‡.

Gen. I. Spec. I. Apostema commune.

In the process of the natural cure of an aposteme, we find that the stage of granulation, and consequently of incarnation, immediately succeeds that of ulceration or the removal of the dead matter. "The vessels," says Mr. Hunter, "forming themselves into a certain structure which fits them for secreting pus, it is so ordered that the same structure also fits them for producing granulations; and thus these two processes are concomitant effects of the same cause, which cause is a peculiar organization superadded to the vessels of the part §."

Granulation and incarnation.

The idea of a change of organization is hypothetical, but ingenious, and perhaps correct. Change of action and change of effect we know; but at the rest we can at present only give a guess, and must leave it to future times to ascertain.

Change of organization hypothetical, but perhaps correct.

The obvious design of granulation or incarnation, as it is often called, is that of repairing the loss the parts have sustained by the injury done: it is that of producing new flesh. Granulation, like vegetation, takes place from the centre below, in a direction upwards towards the skin; and hence exactly contrary to the course of ulceration, which always begins in the superior part of an abscess. The process commonly succeeds best upon exposure to the air, or at least after an opening externally; though there are instances of its having occurred where there has been no exposure whatever. The granulating pullulations, according to Mr. Hunter's explanation, consist of exudations of

Use of granulation.

How it takes place,

and what the pullulations consist of, according to J. Hunter.

* Dissertation on the Properties of Pus, p. 20.

† A Manual of Chemistry, vol. iii. p. 190.

‡ Vol. 1809, p. 313. See also a further description under Marasmus Phthisis in the sequel of the present volume.

§ On Inflammation.—Of Pus, p. 433.

GEN. I. SPEC. I. Apostema commune.

coagulating lymph from the vessels. He conceives it probable, not only that the old vessels extend into these pullulations and become elongated, but that new vessels also form in them, and, like the old, still continue to secrete pus. The granulations, as they become formed, mutually and readily unite; inosculation or the attraction of cohesion is established between them; and their vessels thus joined are transformed from secreting into circulating tubes. Immediately upon their formation, cicatrization seems to be in view. The parts which had receded, in consequence of a breach being made into them, begin now from their natural elasticity, and probably from muscular contraction, to be brought nearer together by the new-created substance; and the contraction of the sore proves a sign that cicatrization is speedily about to follow. This contraction takes place in every point, but principally from edge to edge, which brings the circumference of the sore towards the centre: so that the exposed surface becomes smaller and smaller, even before there is any formation of a new skin.

Two parts of the restorative process that still require explanation.

There are two parts, at least, of this wonderful economy that still demand explanation. The first is the real use of the pus after it is secreted: and the second, the means by which the absorbents carry off the dead matter. The same explanation may perhaps apply to both.

The use of the pus:

That pus is a peculiar secretion distinguished by peculiar properties, and not a solution of the dead animal matter which it is the design of nature to remove, has already been sufficiently shown. "But I am apt to believe," says Mr. Hunter, "that we are not yet well, or perhaps not at all, acquainted with its use, for it is common to all sores; takes place in the most perfect degree in those sores which may be said to be the most healthy, and especially in those where the constitution is most healthy*." It forms, indeed, an exit to foreign bodies: is supposed by many to carry off humours from the constitution, or convert general into local complaints; and by others to act as a preventive of numerous diseases. Yet all these services, even admitting them to exist, are but secondary, and the final intention still remains to be accounted for.

* On Blood, &c. Part II. ch. v. p. 436.

GEN. I. SPEC. I. Apostema commune.

In like manner, since the dead matter of an aposteme does not constitute the pus that is found in it, and hence can only be carried off by absorption, we have yet also to learn by what means it becomes prepared for an entrance into the delicate mouths of the absorbent vessels. There is no small difficulty in conceiving how these very minute mouths can apply themselves with sufficient activity to the various tough and hard substances they have to remove, as tendon and bone, when in close contact with them; but, as soon as the dead part becomes separated from the living, they are often no longer in close contact with them, except at the base, where there is little or no absorption at all; and in many cases, as in boils, carbuncles, and other imperfectly suppurating tumours, possessing cores or tenacious sloughs, are at a considerable distance from them, with the entire body of the contained pus placed intermediately in the hollow.

and how the dead matter becomes fitted for absorption.

These difficulties explained.

Pus possesses a solvent power: yet not of the kind supposed formerly:

In the last case it seems impossible for them to act except through the medium of the pus; in reality except through a solvent power possessed by the pus and exercised upon the matter to be removed. And if such be the nature of the action in this case, it is doubtless the nature of the action in all other cases; and hence we arrive at one immediate and direct use of pus, which is, that of becoming a solvent of the dead animal matter that requires to be carried off: not, indeed, by converting the whole substance at once into a solid mass, and still less into a fluid mass of its own nature, as supposed by Sir John Pringle, but only the surface of the substance to which it is applied; and which hereby is rendered fit for absorption, carried forward to the mouths of the imbibing vessels, and absorbed accordingly. And as the same power is exerted in succession upon every fresh surface of the dead matter that becomes exposed to its action, the whole is at length carried away, and a cavity produced where before was solid substance.

and hence one important use of this fluid.

How far Hewson's view correct.

That pus first kills and then dissolves the organized matter of an abscess was, as we have already seen, the opinion of Mr. Hewson. In the first part of this opinion he was completely mistaken; for, as we have already observed, the organized matter is dead before the process of suppuration even commences; in the second, he seems to

GEN. I. SPEC. I. Apostema commune.

a certain extent to have been correct, though he still erred in supposing the dead substance to be melted down into its own nature, and was unacquainted with the important process of its absorption. But in advancing his own full and more elaborate hypothesis against the mistake of Mr. Hewson, Mr. Hunter ran into the opposite extreme; and contended that pus is not designed to be a solvent at all, and that animal substances are decomposed in it with very great difficulty: thus leaving us totally at a loss to account for its use; and equally so to explain the manner in which the mouths of the absorbents of an abscess can operate upon, or even, in many instances, get at the material they are to remove.

How far Hunter's view erroneous.

Hunter's appeal to experiments.

Mr. Hunter, however, with the candour that so peculiarly belonged to him, made this question a subject of experiment, and the experiment, as he conceived, fully established his pre-conceived opinion; and gave proof that the pus of an abscess does not act as a solvent. This conclusion of his only shows how difficult it is for the most honourable mind, when biassed by a favourite hypothesis, to weigh with an even hand the evidence that lies before it. "To see," says he, "how far the idea was just, that dead animal matter was dissolved by pus, I put it to the trial of experiment, because I could put a piece of dead animal matter of a given weight into an abscess, and which could at stated times be weighed. To make it still more satisfactory, a similar piece was put into water, kept to nearly the same heat. They both lost in weight; but *that in the abscess most.* And there was also a difference in the manner, for that in the water *became soonest putrid**." There is nothing in animal chemistry, strictly so called, that decomposes animal substances so rapidly as putrefaction. And yet, in the present instance, the pus of an abscess evinced a more active decomposing power than the fluid of water, though aided by the accessories of putrefaction. It is not very wonderful that Mr. Hunter, though regarding this result as in his favour, should not be disposed to "rely on its accuracy," and he refers us, therefore, for a further proof, to a more competent experiment of

The experiment apparently at variance with his conclusion.

* On Blood &c. Part II. ch. v. p. 419.

Mr. (now Sir Everard) Home, which consisted in immersing a portion of muscle weighing exactly one drachm, "in the matter of a compound fracture in the arm of a living man, and a similar portion into some of the same matter out of the body; also a third portion into fluid calf's-foot jelly, in which the animal substance was pure, having neither wine nor vegetables mixed with it. These portions of muscle were taken out every twenty-four hours, washed in water, weighed, and returned again."

GEN. I. SPEC. I. Apostema commune. Experiment of Home.

The result of this experiment is still more in favour of the solvent power of pus, than the preceding. At the end of forty-eight hours, there was indeed no great difference, as the muscle in the abscess was reduced to thirty-eight grains, and that in the other two fluids to thirty-six. But, from this period to ninety-six hours, the muscle in the jelly continued the same, while that in the abscess was reduced to twenty-five grains; and that in the exposed pus dissolved*; the power of putrefaction, as Mr. Hunter observes, being in this last case superadded to that of the pus itself.

This experiment alike at variance with Hunter's conclusion.

We hardly stand in need of other experiments. The solvent power of pus above that of water, of animal jelly, and hence we may conclude of animal fluids in general, is sufficiently established by the very evidence that is advanced in opposition to this power. And it should hence seem, that one at least of the direct uses of pus is to reduce, surface after surface, the dead animal matter which is exposed to its action to that state in which it may be rendered fit for absorption, and at the same time conveyed to the mouths of the absorbent vessels.

But I have for many years thought, that it has also another equally important use; that, I mean, of assisting in the process of granulation; and a late article of Sir Everard Home, containing the observations of Mr. Bauer upon the germination of plants, and his application of those observations to the growth of the new vessels in animals†, seems, if not to have settled the question, at least to have very considerably favoured this view of it.

Second use of pus to assist in the process of granulation.

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* Dissertation on the Properties of Pus, p. 32.

† Phil. Trans. 1818, p. 180–194.

GEN. I. SPEC. I. Apostema commune.

Confirmed by experiments of Bauer:

Having sown a quantity of wheat for the purpose of noticing the changes which occurred from the first, Mr. Bauer took up every day several grains or plants for examination till they were ripe; and, in the course of his attention, was much struck with the rapid increase of the tubular hair of the root of a young plant of wheat in its earliest stage of vegetation; and, fixing his view entirely to that part of the plant, he observed small pustules of a slimy substance arising under the epidermis in the surface of the young root; and, in a few seconds, a small bubble of gas bursting from the root into the slimy matter which it extended in a moment to the length the hair was to acquire; when the slimy matter surrounding the gas immediately coagulated and formed a canal. He repeated his observations on another plant, whose pubescence consisted of a jointed hair, and observed the same effect; a bubble issued from the young stalk, and extended the slimy mucus to a short distance, forming the first joint, which immediately coagulated and became transparent; and, at its extremity a new pustule of the same slimy matter accumulated, into which, in a short time, the gas from the first joint rushed: and thus, in a moment, a second joint was formed. In the same manner, he observed the formation of the hairs of ten or twelve joints take place.

and Home.

Impressed with the importance of these facts, Sir Everard Home immediately began to inquire how far the same course is pursued in the production of new animal matter. He first ascertained by experiments of Mr. Brande, already noticed in the Proem to the second class of this work*, that blood in a state of circulation contains a considerable proportion of air, which, in the process of its coagulation, escapes in the form of carbonic acid gas, and in its escape produces bubbles as in the slime of plants; and that it escapes equally from the coagulating blood of veins and arteries, from effused serum, and from pus. And in pursuing the subject he found, that, on the coagulation of a drop of blood placed in the field of a microscope, an intestine motion occurred, and a disengagement of a some-

* Vol. i. p. 516.

thing took place in different parts of the coagulum; beginning to show itself where the greatest number of globules were collected, and from thence passing in every direction with considerable rapidity through the serum, but not at all interfering with the globules themselves, which had all discharged their colouring matter. Wherever this extricated colouring matter was carried, a net-work immediately formed, anastomosing with itself on every side through every part of the coagulum. When the parts became dry, the appearance of a net-work remained unaltered. In some instances bubbles were seen to burst through the upper surface of the coagulum; this however did not prevent the ramifications that have been described from taking place. "When this happens," continues Sir Everard, "in living animal bodies, from whatever cause, and in whatever circumstances it takes place, no difficulty remains in accounting for its afterwards becoming vascular, since all that is necessary for this purpose is the red blood being received into the channels of which this net-work is formed." He next proceeded to the subject immediately before us. "As the globules of pus," says he, "are similar to those of blood, I made experiments upon the fluid in which they are suspended, and found inspissation produce the same effect on it as coagulation does on the other; that a similar net-work is formed and apparently by the same means, since if pus be deprived of its carbonic acid gas (of which it contains a large quantity) by exhaustion in the air-pump, no such net-work takes place."

GEN. I. SPEC. I. Apostema commune.

Additional experiments are still necessary upon this interesting subject; but so far as they go, they seem very clearly to indicate the important and double use to which pus is subservient; that it acts as a solvent upon the dead matter, preparing it for absorption, and as a fomes for granulation and the production of new vessels.

Other experiments necessary: but the present nearly decisive.

Nor let it be observed, in opposition to this conclusion, that we are thus endowing it with incongruous and contrary qualities; and that, if it be erosive in the one instance, it cannot be nutrient in the other; for the animal economy presents us with various examples of like effects, contrary indeed but not contradictory, produced by one and the same secretion on dead and on living matter, for which we need go no further, than to the very common operation of

No incongruity in these two qualities inhering in the same substance.

GEN. I. SPEC. I. Apostema commune.

Illustrated by the qualities of gastric juice.

the gastric juice; which, while the most powerful solvent of dead animal matter in the whole range of animal chemistry, is a healthy stimulant to the living stomach, and even to other living organs; and has successfully been applied externally for this purpose by surgeons, to weak and ill-conditioned ulcers, and employed by physicians as an internal tonic in cases of dyspepsy and cardialgia.

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## SPECIES II.

## APOSTEMA PSOATICUM.

### *PSOAS ABSCESS.*

PAIN AND TENSION ABOUT THE LOINS, SHOOTING DOWN THE SPINE AND THIGHS; DIFFICULTY OF STANDING ERECT; FLUCTUATING ENLARGEMENT ALONG THE PSOAS MUSCLE; APEX OF THE TUMOUR IMMEDIATELY BELOW THE GROIN.

GEN. I. SPEC. II. Primary seat of the disease difficult to be determined.

THIS is one of the most lamentable diseases we can ever be called upon to attend. It commences insidiously, and, at the same time, in parts so deeply seated as to render it very difficult to determine the place of its origin; and hence, the psoas muscle itself, the cellular substance interposed between the peritonæum and the loins, the lymphatic glands, and the lumbar vertebræ have been pitched upon by different writers. It is probable that most of these have formed the primary seat of affection in different cases, and that the inflammation has subsequently spread to one or more of the other parts: and hence, assuming no inconsiderable degree of latitude, M. Chaussier denominates the disease *Femoro-Coxalgie*. [The cellular substance behind the peritonæum, or about the psoas muscle, is now ascertained to be the most common seat of the abscess in its commencement. When the spine becomes carious in consequence of the pressure of an abscess, it has been correctly observed by Mr. Brodie, that the symptoms are

Femoro-coxalgie of Chaussier.

different from those which attend a caries of the spine, commencing in the spine itself. For instance, the paralytic affection of the lower extremities is generally absent. Caries of the vertebræ and intervertebral cartilages, however, is sometimes the primary disease*, and the abscess the subsequent one. This case would be characterized by the peculiar paralysis of the legs, resulting from original caries of the vertebræ and disease of their ligaments and cartilages.] The pain, attending the formation of lumbar abscess, is at first by no means violent, and the patient thinks lightly of it; it is sometimes felt in the back rather lower than the region of the kidneys; and generally extends down the thigh. [The testicle of the affected side is frequently retracted, and more or less uneasiness and pain are felt in the course of the spermatic cord. A very little exercise fatigues the patient, who mostly inclines the trunk forward, and in bed generally keeps the thigh of the affected side bent, a relaxed state of the psoas muscle being the most easy to him. The symptoms frequently continue stationary a long time. At length, a change occurs, indicated by rigors, loss of appetite, and followed by considerable acceleration of the pulse. Soon afterwards the fluctuating tumour presents itself.] From the deceptive manner of its attack, medical treatment, which might have been of essential service at first, is fatally postponed; and the symptoms are regarded as those of an accidental strain. After the abscess is formed, however, the pain, in most cases, increases considerably; in common instances, the matter follows the course of the psoas muscle, and points externally a little lower than the inguinal glands; or it passes down the thigh, where, however, it is apt to dissever the muscles and form sinous abscesses. Sometimes, though rarely, the matter passes through the muscles of the back, and is discharged in the loins; and, in a few instances, it has been known to fall into the cavity of the back part of the pelvis. The abscess, on account of its great extent, is highly dangerous; an extent which it generally attains ere it points externally, or admits of being discharged. Hence, the patient very frequently sinks under a hectic fever, pro-

GEN. I. SPEC. II. Apostema psoaticum.

Progress of the disease.

Abscess may discharge itself by different outlets.

Highly dangerous: and often productive of fatal hectic.

* See Brodie's Pathological and Surgical Observations on the Diseases of the Joints, pp. 301—302. Ed. 2.

GEN. I. SPEC. II. Apostema psoaticum.

duced by the local irritation. While in most cases, in which it has made a natural opening for itself, it has been found connected with so many deep sinuses, which cannot be followed up, that the same effect ensues.

[It is a curious fact in relation to this subject, that psoas abscess should rarely be met with in the United States of America. Professor Gibson saw only four cases of the disease during thirteen years, although professionally connected with extensive hospitals and alms-houses most of that time. Dr. Physick never met with a case of psoas abscess in America, unconnected with disease of the spine*. If these statements coincide with the experience of other practitioners in America, they are highly interesting, as affecting the question, whether, as is generally supposed in England, the psoas abscess is necessarily connected with a scrophulous constitution?]

Medical treatment rarely of avail.

No mode of medical treatment has been found productive of any good purpose; and the case has been, in a very early stage of the suppuration, given over to the surgical practitioner. Yet even here different individuals have pursued different lines of conduct. [Kirkland believed that the patient had the best chance of recovery when the abscess was allowed to burst of itself, and *discharge itself very gradually by a small outlet.* The latter precept has been found to be one of great importance.] Mr. Bell advises an early evacuation of the matter, lest the bones should become injured; while Mr. Abernethy apprehends less danger from its being suffered to remain, and at last evacuates it at different intervals, and by successive operations: by which means the cyst, in which the pus is principally lodged, may have an opportunity of contracting; and this, he thinks, it has a greater tendency to do than in abscesses where the inflammation is more violent. He is also attentive to close the opening the instant the matter is discharged, so as to prevent any increase of the inflammation by an access of air.

Surgical treatment discrepant.

Suggestion as to the real cause of danger.

The real cause of danger does not seem to have been hitherto hit upon; but it may probably be referred to that tendency to a rapid spread of inflammation over their entire

* Gibson's Institutes and Practice of Surgery, vol. i. p. 214. Philadelphia, 1824.

surface, which Mr. Hunter has shown to exist in all internal cavities, and the hazard of which is in proportion to the extent of the cavity; a subject, already touched upon in the discussion of puerperal fever, and which we shall have other opportunities of illustrating as we proceed, particularly in some cases of varicose enlargement of the veins. Now in the disease before us we have not, it is true, any natural cavity, but we have an artificial cavity of long standing, and large extent, in a highly irritable state, and which is therefore peculiarly predisposed to run into all the fatal effects of large natural cavities, when injured or otherwise rendered imperfect. The author throws out this hint, however, for future and general consideration. Gen. I. Spec. II. Apostema psoaticum.

[Mr. Crowther has recorded a few cases, in which psoas abscesses were dispersed by the application of large blisters to the swelling, which were kept open with the savin cerate. The same practice, combined with the occasional employment of emetics, was also formerly recommended by Mr. Abernethy.]

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## SPECIES III.

## APOSTEMA HEPATIS.

### *ABSCESS OF THE LIVER.*

DIFFUSE PULSATING TUMOUR IN THE REGION OF THE LIVER; PRECEDED BY PAIN, A YELLOW COUNTENANCE, AND SHIVERING.

[The ordinary symptoms, besides those spoken of in the definition, are, swelling and tension of the right hypochondrium, sometimes extending beyond it; pain in the right side, much aggravated by inspiration, or pressure, and occasionally shooting up to the shoulder. In the case recorded by Dr. O'Brien, there was also great weakness of the right arm; a pale anxious countenance, without yellow- Gen. I. Spec. III. Diagnosis.

GEN. I. SPEC. III. Apostema hepatis.

ness; pulse 120, small and feeble; and no vomiting*. Much doubt having been expressed by some physicians, whether true laudable pus could be formed in the substance of the liver, that distinguished pathologist C. P. A. Louis, investigated the question, and in the dissection of 430 subjects, met with five cases of hepatic abscesses, all of which presented genuine purulent matter†. It appears also from his dissections, that the abscesses are frequently encysted, and that the neighbouring portion of the liver is sometimes softer, but sometimes more indurated than natural. In the cases of encysted abscesses, examined by himself, he could not decide positively whether they preceded, or were the consequence of, a dissolution of a greater or lesser number of tubercles; but he inclines to the latter opinion. In one very interesting case, reported by this author, the patient had voided large quantities of blood from the anus, and after death a clot of blood was found in a cyst in the liver; from which part it is inferred the blood had passed into the intestinal canal. As no communication could be traced, however, between the cavity and the biliary ducts, the conclusion appears to the editor very questionable. A common complication of abscesses of the liver seems to be a softening and ulceration of the mucous membrane of the bowels, especially that of the large intestines, the same affection of the lining of the small ones not being very common, except in phthisis pulmonalis, and fevers. The mucous coat of the stomach in some cases had red specks on it, was much softened, and, in certain places incompletely ulcerated. Abscesses of the liver are mostly not single, but more or less numerous. Their general fatality is partly ascribed by M. Louis to the liver not having perhaps the power of repairing the mischief, as he never observed traces of cicatrization in it. Yet this inference seems to be contradicted by the cures, which are upon record §.]

Pathological facts.

This is also a very fatal disease; and usually terminates in one of the following ways:

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* Trans. of Physicians in Ireland, vol. i. p. 44.

† Louis, Mém. et Recherches Anatomico-Pathologiques, p. 352. 8vo. Paris, 1826.

‡ Op. cit. p. 383.

§ Op. cit. p. 385—391—408.

Firstly, The substance of the liver is gradually and almost entirely absorbed from long-continued irritation: the melancholy accompaniments of which are a tedious icterical marasmus, hectic fever, great anxiety, and a sanious and fetid diarrhœa, which is the forerunner of death. GEN. I. SPEC. III. Apostema hepatis. Terminates variously.

[In one example, recorded by Dr. O'Brien, the abscess extended over two thirds of the liver, the biliary ducts were nearly annihilated, and all but one-sixth of the gall-bladder destroyed *. In another case, reported by Professor Gibson, he says, that upon dissection the fistulous orifice in the side was traced into the liver, or rather into its remains; for its substance had disappeared, and nothing of its structure could be found, except a shell, or cyst, somewhat larger than an egg, and filled with brownish matter †.] Extensive absorption of the liver. Abscesses and diseases of great extent.

Secondly, The abscess breaks internally and discharges itself into the belly; by which means the rest of the viscera are affected; and the termination is marasmus, ascites, and dissolution. According to M. Louis, this mode of evacuation only takes place in chronic hepatis ‡. The apostеme may open into the cavity of the abdomen.

Thirdly, The pus sometimes finds a passage into the biliary ducts, and thence into the intestines; from these it is occasionally thrown into the stomach and vomited in the form of a dark offensive material: but far more generally it is carried downward and produces a violent looseness. Acids and acescent medicines may here palliate for a time; but the issue is always fatal. The pus may find a passage into the intestines.

Fourthly, The enlarged liver becomes, in some cases, united by adhesive inflammation to the peritonæum, and the abscess opens externally; and, in this case, there is a chance of cure. The openings should be expedited by a caustic or the knife: and the cure will greatly depend upon the nature of the fluid which is discharged. The apostеme may burst externally.

Fifthly, There is reason to believe, that, in a few rare instances, the matter is carried off by absorption, when a healthy granulation takes place, and a cure is completed without any opening. This termination is more reasonably to be expected in a constitution otherwise sound, and where the liver has not been weakened or rendered torpid by any The pus may be carried off sometimes by absorption.

* See Trans. of Physicians in Ireland, vol. i. p. 48.

† Institutes of Surgery, vol. i. p. 211.

‡ Mém. et Récherches Anat. Pathol. p. 372.

GEN. I. SPEC. III. Apostema hepatis.

former affection. It is hence rather to be looked for in a temperate than in a tropical climate, and in youth than in advanced life.

May pass into the chest, and enter into the bronchiæ.

[Sixthly, In certain cases, the matter of the abscess has made its way by ulceration through the diaphragm, and been either effused in the chest, or, opening a communication with the bronchiæ, been coughed up from the lungs.

Causes of suppuration of the liver.

In hot climates, where acute and chronic hepatitis are very common complaints, abscesses of the liver are often noticed. In Great Britain, they do occur; but not very frequently. The liver may suppurate, however, from other causes, besides common hepatitis; as from blows or injuries of the head *; biliary concretions; and the presence of worms in the biliary ducts †. In the Surgical Museum of the University of Pensylvania is a preparation, in which the substance and ducts of the liver are filled and perforated in every direction by numerous and very large lumbrici. The patient, a child, fell a victim to the irritation and suppuration ‡.]

Not always easy to detect pus when no opening.

When the cure takes place without an opening, it is not always an easy matter to determine for a certainty, that pus has actually been formed. But sometimes we can trace a fluctuation; and at other times the subsidence of the tension, pain, and pulse, after one or two severe shivering fits, may be regarded as sufficient indications. In a case of this kind that occurred to me in a young gentleman of about thirteen years of age, the shivering was so considerable as to make the teeth chatter; and within eight-and-forty hours the pulse sunk from a hundred and forty to a hundred and twenty; and the abdominal tension and tenderness were considerably abated; as was also the distressing cough with which he had almost perpetually been harassed

Yet the symptoms often sufficient to decide.

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* Quesnay, in Mém. de l'Acad. de Chir. tom. i. p. 147. Bertrandi de Hepatis Abscessibus; Œuvres Chir. de Desault, tom. i. Also a valuable paper by Mr. Rose on depositions of pus, &c. in the viscera after injuries of different parts, in Med. and Chir. Trans. vol. xiv. p. 251, &c. The fact of abscesses of the liver arising from injuries of the head is doubted, however, by the very eminent pathologist, M. Louis. See his Récherches Anat. Pathol. p. 405. The editor has no doubt of the frequency of the occurrence having been exaggerated by writers.

† See Kirkland's Inquiry into the present State of Medical Surgery, vol. ii. p. 186. Also Bond, in Med. Obs. and Inq. vol. i. p. 68.

‡ See Gibson's Institutes of Surgery, vol. i. p. 209.

for some weeks. He was put upon a tonic plan of columbo and sulphuric acid immediately after this change, and recovered gradually.

GEN. I. SPEC. III. Apostema hepatis.

[In India, the rapidity with which inflammation of the liver frequently proceeds to suppuration, has sometimes been so great as scarcely to admit of time for the employment of antiphlogistic remedies. As Dr. O'Brien observes, this should never be neglected in chronic hepatitis, even where mercury may subsequently become necessary; and he commends general bleeding, and the use of cupping and leeches. In this country, surgeons rarely open abscesses of the liver in an early stage; but, in India, the contrary practice is said to prevail and be found the most advantageous.]

Early antiphlogistic membranes.

In India abscesses of the liver opened early.

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## SPECIES IV.

## APOSTEMA EMPYEMA.

### *LODGMENT OF MATTER IN THE CHEST.*

FIXT PAIN IN THE CHEST: BREATHING LABORIOUS, BUT EASIEST IN AN ERECT POSITION; DIFFICULT DECUMBITURE ON THE SOUND SIDE; FLUCTUATING ENLARGEMENT ON THE SIDE AFFECTED; DRY, TICKLING COUGH.

To the symptoms enumerated in the above definition Hippocrates adds *, œdema of the feet, hollowness of the eyes, and a gurgling sound on shaking the shoulder. Of these additional signs, the first two belong rather to the hectic fever that generally accompanies empyema, than to the disease itself. The last has sometimes been met with in modern times†. Dr. Cullen regards empyema as a mere sequel of pneumonia, which with him includes inflammation of the pleura, as well as of the lungs; but as it may

GEN. I. SPEC. IV. Symptoms noticed by Hippocrates.

Not always a sequel of pneumonia as presumed by Cullen.

* Περὶ Παθῶν, pp. 476, 496.

† Trecourt, Mémoires de Chirurgie, &c.

GEN. I. SPEC. IV. Apostema empyema.

take place from inflammation of the mediastinum, pericardium, or diaphragm, to say nothing of that from external injuries, and as it is often doubtful what particular organ is directly injured, a separate species seems decidedly called for.

Sometimes produced by the bursting of a vomica.

An empyema is sometimes produced by the bursting of a large vomica of one of the lungs into the cavity of the pleura. In which case, the cough becomes more frequent than before this result, and is either dry, or accompanied with a scanty, frothy, and noisy expectoration. The breathing becomes extremely difficult, with repeated fainting fits, and the dew of a cold sweat hanging over the throat and forehead; the cheeks and lips are of an ominous red, while the nails are livid, the pupils dilated, and the sight dim.

Diagnostics of percussion and the stethoscope.

If percussion or the stethoscope be employed, before the vomica has broken, to the part in which the matter is seated, little or no sound will be returned in consequence of the pressing fulness which exists there; but if these methods be resorted to afterwards, it will be found restored in a considerable degree to the part affected from the hollowness which now exists there, while it will be comparatively found diminished in the posterior and inferior parts of the chest to which the discharged load is transferred. For the history and relative value of these diagnostics, the reader must turn to the treatment of PHTHISIS in the ensuing volume*.

Vomicæ burst into the chest.

[Laennec does not seem to approve of the application of the term empyema to the bursting of a large vomica into the chest: "I apprehend," says he, "no one now considers empyema as the product of a vomica, which has burst into the cavity of the pleura. A softened tubercle may indeed discharge its contents in this manner, and may thus become the cause of a considerable effusion by exciting a chronic pleurisy; but in such a case, the tuberculous matter must only be considered in the light of an extraneous body, determining inflammation and consequent effusion by its mechanical or chemical qualities. It is also to this species of pleurisy that we must refer those histories of lungs entirely destroyed by suppuration, which we find

* Vol. iii. cl. iii. ord. iv. gen. iii. spec. v.

recorded in the older writers*." In this country, however, whatever may be the principal source of the purulent fluid in the cavity of the pleura, the term empyema is employed. In acute pleurisy, besides an effusion of coagulating lymph, a serous fluid is poured out, which is of a light yellow colour, and transparent, or with its transparency only slightly lessened by the intermixture of small fragments of concrete pus or lymph. In the latter case, it resembles unstrained whey. The fluid is generally devoid of smell. Many physicians suppose, that, in acute pleurisy, no effusion takes place till after some days; but Laennec declares, that he has several times observed all the physical signs of effusion, that is ægophonism†, and absence of the respiration and sound on percussion, in one hour from the commencement of the disease, and he has seen the side obviously dilated at the end of three hours. On the other hand, he does not remember to have met with a single case, in which the effusion was doubtful under the stethoscope during the first and second day. The utmost that he admits on this point is, that the effusion continues to increase for several days, and that it is only at the end of this time, that it becomes too manifest to be overlooked, from the dilatation of the affected side, and the total absence of sound on percussion. He is convinced, that the effusion of serum is contemporaneous with inflammation in all serous membranes‡. The fluid effused is generally absorbed after the inflammation has subsided; and it is only when it remains in such quantities as to occasion very urgent symptoms, that any operation should ever be contemplated for its discharge.

GEN. I. SPEC. IV. Apostema empyema.

Quality of the fluid in acute pleurisy.

Time of its effusion.

The disease, which Laennec represents as producing the most common species of purulent empyema, is chronic pleurisy, of which he describes three kinds: 1st, that which is chronic from its origin: 2dly, acute pleurisy, become chronic: 3dly, pleurisy complicated with certain organic productions on the surface of the pleura, bearing a gross resemblance to cutaneous eruptions.

Chronic pleurisy as producing empyema.

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* On Diseases of the Chest, p. 448, ed. 2. tr. by Forbes.

† A tone for echo of the voice, distinguished with the stethoscope; and so named by Laennec, from its having a trembling or bleating sound, like the voice of a goat.

‡ Laennec on Diseases of the Chest, p. 423—425. Ed. 2, by Forbes.

GEN. 1. SPEC. IV. Apostema empyema.

According to Laennec, chronic pleurisy does not differ essentially in its anatomical characters from the acute; the pleura, however, is generally of a deeper red, and the serous effusion is more abundant, and almost always less limpid, being mixed with small albuminous flocculi. In chronic pleurisy, the extravasated fluids have a more fetid smell than in the acute, and often yield a strong alliaceous odour, analogous to that of gangrene. The effusion is rendered daily more considerable. The affected side becomes manifestly larger; the intercostal spaces grow broader, and rise to a level with the ribs, and sometimes even higher. The lung, compressed towards the mediastinum and spine, and retained in this position by a pseudo-membraneous exudation, is sometimes so reduced in size as not to be more than four or six lines thick even in its middle. In this state, the pulmonary tissue is soft, pliant, and dense, without any crepitation, more pale than natural, and almost without blood; yet the alveolar texture very distinct.]

Morbid appearances of the pleura in chronic pleurisy.

Other changes.

Pus not always to be referred to any particular organ.

Modern researches prove, that collections of pus in the chest frequently occur without any appearance of ulceration. To such cases Mr. Hewson has several references. "The cavities of the pleura, pericardium, &c." says he, "are sometimes observed to contain considerable quantities of pus without the least marks of ulceration. In one patient, I found three pints of pure pus in the pericardium without any ulcer either on that membrane or on the heart. In another the cavity of the pleura of the right side was distended with a pus that smelt more like whey than a putrid fluid, and the lungs were compressed into a very small compass: but there was no appearance of ulcer or erosion either on these organs or on the pleura; but only under the pus was a thin crust of coagulable lymph." We have already made some observations upon this secretion of imperfect pus, and it is not necessary here to dwell upon it.

Instances of metastasis.

Numerous cases are on record in which the contained fluid has disappeared. It has passed off by the intestinal canal*, by the bladder†, and by the vagina‡ in the form

* Kelner, Diss. de Empyemate. Helm. 1670. Marchetti, Obs. 82. 89.

† Buchner, Diss. sistens solutionem Empyematis per mictionem purulentam. Hal. 1762. N. Act. Nat. Cur. vol. i. Obs. 5.

‡ Schlichting, Phil. Trans. vol. xlii. p. 70.

of pus. It has also been frequently carried off by an opening formed by nature, and the patient has recovered his usual health. This opening has commonly been between the ribs, most usually between the third and fourth, but in one instance we find the abscess pointing and bursting under the scapula*. [The escape of the effused fluid through the intercostal muscles from gangrene of a portion of the pleura, is regarded by Laennec as very rare. He says, that he has only seen one case of it himself, and that M. Recamier has not seen more than two; and with respect to another mode in which the fluid finds vent, namely, in consequence of the formation of an abscess in the intercostal spaces, and its rupture both externally and internally, Laennec has only met with a single case of this kind. Andral reports three others. There can be no doubt, from the numerous examples on record, that these events are much more common than Laennec imagined. Dr. Forbes expresses his belief, that, in cases of chronic pleurisy, the escape of the matter through the walls of the chest is by no means very uncommon. He has himself met with more than one instance of it. Laennec states, that a cure has, perhaps, more frequently followed the evacuation arising from these kinds of abscesses, than from an operation. The cure, however, is not always complete, as a fistula is apt to remain, frequently kept up by a caries of the ribs†.]

Gen. I. Spec. IV. Apostema empyema.

Matter sometimes makes its way outward between the ribs.

Morgagni has recorded a singular case of a double empyema, a lodgment of pus being formed on both sides‡. And Balme a still more extraordinary case, in which the pus entered the cellular membrane and spread over almost the whole trunk§.

Double empyema. Ramifying over the entire trunk.

Dr. G. Hawthorn has given an instance of this disease that, for its severity and danger, and particularly for its successful issue, is well worth recording‖. The patient was thirty years of age, and the disease had been brought on by exposure to damp night-air in a state of intoxication. He suffered greatly from quickness of pulse, inces-

Singular case by Hawthorn.

* Hurten, Diss. de Empyemate. Argent. 1679.
† See Laennec on Diseases of the Chest, p. 435. ed. 2.
‡ De Sed. et Caus. Morb. Ep. xxii. Art. 13.
§ Journ. de Médecine, tom. lxvi. p. 244.
‖ Edin. Med. and Surg. Journ. No. lxi. p. 513.

GEN. I. SPEC. IV. Apostema empyema.

sant cough, oppression, and dread of suffocation. A distinct fluctuation was perceived in about three weeks from the attack; shortly after which he was a little relieved by a discharge of purulent matter effused into the bronchial cells, and expectorated to the extraordinary amount of five or six pounds daily, for many days in succession, a fluid of an intolerably offensive smell, and putrid appearance. He continued, however, to grow worse and weaker; his feet and legs swelled; his countenance was ghastly, and he had colliquative sweats. About twelve weeks from the attack, the operation was performed, nearly twenty pounds of pus were discharged on the first day and night; and he gradually recovered.

[The evacuation of the matter by the bronchiæ is stated by Laennec * to be more common, than that through the intercostal muscles. The fact, he believes, was first clearly established by Bayle. It scarcely ever occurs but in chronic pleurisy; though Andral relates one example of it in the acute disease †.

Cases requiring the operation.

The symptoms, indicating the propriety of an operation are, the dilatation of the affected side; œdema of the same side and arm; depression of the liver; and displacement of the heart towards the side free from fluid. Laennec has shown, however, that all these symptoms may be absent; and it even frequently happens, that at the very time when an operation is proper, the affected side, although full of pus, is smaller than the opposite one, in consequence of the absorption, which has already taken place. But, in all such cases, the results of percussion and auscultation leave no doubts, respecting the effusion ‡. Laennec points out two cases of pleurisy, requiring that an operation should be performed for the discharge of the fluid from the chest. The first is when, in an acute pleurisy, the effusion is very copious from the beginning, and increases so rapidly as to give rise, after a few days, to general or local anasarca, and to threaten suffocation. The second is a chronic case, either in consequence of a pleurisy originally chronic, or of the acute disease changed

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* Op. cit. p. 436. † Clinique Médicale, tom. ii. Obs. 36.
‡ Laennec, Op. cit. p. 475.

into this state. In such circumstances, when œdema of the affected side has come on, when the long continuance of the disease, the progressive emaciation and debility of the patient, and the failure of every measure employed to produce absorption, leave nothing to be expected from other means, the operation is warrantable.] GEN. I. SPEC. IV. Apostema empyema.

When the fluid is discharged by paracentesis, Hippocrates repeatedly urges the surgeon to evacuate it only by degrees*; and Borelli gives a case in which the patient seems to have sunk under a sudden evacuation†. There has also been no small discussion, concerning the part of the thorax to which the scalpel may be most advantageously applied. David advises near the sternum‡; Mr. Sharp between the sixth and seventh ribs§; Mr. Bell wherever the pain or fluctuation may direct‖. Advice of Hippocrates. Where the opening should take place.

Mr. Warner, whose success made it many years ago a favourite operation in our country, seems to have been of Mr. Bell's opinion, and varied the point of opening according to the nature of the case. And so little danger did he apprehend from the use of the scalpel on any occasion, that he not only evacuated in all instances the whole of the matter at once, but in one or two examples operated, where there was neither a polarized pain, nor fluctuation, nor visible discolouration, nor any external sign whatever, to direct him to one part rather than to another, or even to determine the real nature of the disease; otherwise than from the specific symptoms laid down in the preceding definition¶. Warner's success and mode of practice. Evacuated the whole of the contained pus at once.

In Mr. Warner's cases, about twenty ounces of pus formed the average of discharge at the time of the perforation**: the patients usually found instant relief; the pain, cough, and quickness of pulse diminishing, and the breathing becoming easier. He dressed the wound with a sponge-tent till there was no longer any discharge, and afterwards Usual mode of treatment.

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* Περὶ Νουσῶν, ii. p. 476. l. 42. Περὶ τῶν ἔσω παθῶν, p. 536. l. 15.

† Cent. i. Obs. 72. ‡ Mem. pour le Prix de l'Academie, x.

§ Critical Enquiry, &c. Chap. vi. ‖ Surgery, vol. ii. 390.

¶ See Original Cases and Dissections, &c. by John Forbes, M.D. p. 257. 8vo. Lond. 1824.

** See Phil. Trans. vols. xlvii. xlviii. li. as also his works in their collected form.

GEN. I. SPEC. IV. Apostema empyema.

superficially; and, in about six weeks, the patients were cured. In this case, it is perhaps more necessary to keep the wound open than in any other operation; for otherwise the secreted pus is apt to accumulate, and the operation must be renewed.

Laennec's reasons for making the incision between the fifth and sixth ribs.

[The following remarks by Professor Laennec are interesting. The place of election, he says, commonly adopted by surgeons for this operation, is the most depending point in the anterior and lateral parts of the chest; a rule that cannot be good always, because the most dependent point varies with the position of the patient. The natural posture of a patient, affected with empyema, is to lie on the diseased side; and in this case, the most depending point is the space between the fifth and sixth ribs. Many other reasons, Laennec observes, point out this spot as the best. For instance, we know that the upper lobe adheres to the ribs more frequently than any other part of the lungs, and that the lower lobe is frequently attached to the diaphragm. On the right side, we know, that an enlarged liver frequently reaches as high as the sixth, or even the fifth rib; and that, on both sides, the thickest false membranes, and consequently adhesions, exist at the junction of the diaphragm with the walls of the chest. Finally, we know, that the greatest portion of the effused fluid is collected about the middle of the side. The best point is a little anterior to the digitations of the serratus major. Should there chance to be any old adhesions in this point, we shall readily discover them by means of some remains of respiration over their place. But, if on percussion the sound be dead at this spot, and the sound of respiration be wanting, we may safely make an incision.]

Riedlin operated with success twice on the same person *.

Matter discharged of various appearances and qualities.

The matter, when discharged or examined on dissection has been found of very different consistences; sometimes like what Laennec has described; sometimes pure pus; sometimes cheesy; and sometimes gelatinous. And the mischief to the interior of the chest has in some cases been very great. Several of the ribs have been found carious †;

* Lin. Med. Ann. v. Obs. 30.

† Heuermann, Vermischte Bemerkungen, ii. p. 217.

the lung on the affected side totally eroded*; and, in one case, the pericardium destroyed as well as the lung†. The morbid changes, described by Laennec, have already been noticed.

Causes of the frequent ill success of the operation.

[Owing to various causes, the operation is generally unsuccessful. 1. The first of these, as specified by Professor Laennec, is the bad condition of the lung itself, which is frequently tuberculous. 2. The irritation of the pleura by the entrance of air into the chest has been considered the chief cause of the great and offensive discharge, which too often ensues and destroys the patient. The admission of air into the chest, Laennec admits, must affect the action of the organs contained in it; but its immediate impression, he says, is not on the pleura, which, in acute pleurisy, is covered with lymph, and, in chronic, with thick pultaceous matter. 3. The greatest impediment to the success of the operation is, in Laennec's opinion, the compression of the lungs against the spine and mediastinum, and the nature of the investing false membrane. The lung from long compression has lost its elasticity and expansibility; the inspired air penetrates it with difficulty; and the original dimensions of the organ are very slowly recovered. Indeed, it never returns to its natural size. Hence, with the view of favouring the expansion of the lung, Laennec had it in contemplation to revive the plan of exhausting the air from the chest with cupping glasses; a plan best accomplished with a syringe, as advised by Mr. Jowett, and formerly recommended by Scultetus and Anel‡.]

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* Kelner, Diss. de Empyemate. Helmst. 1670.

† Goekel, Gallicinium Medico-pract.

‡ See Laennec on Diseases of the Chest, p. 476–479. ed. 2. by Forbes.

## SPECIES V.

## APOSTEMA VOMICA.

### *VOMICA.*

DERANGED FUNCTION OF A THORACIC OR ABDOMINAL ORGAN; SUCCEEDED BY A COPIOUS DISCHARGE OF PUS INTO SOME PART OF THE ALIMENTARY CHANNEL; AND ITS EVACUATION BY THE MOUTH OR ANUS.

GEN. I. SPEC. V.

THE specific term is a derivative from the Latin *vomo*, "to eject," especially from the stomach, but not exclusively so; and hence, on the present occasion, it is used in the comprehensive sense in which it is employed by Celsus, who applies it to a bursting of pus from the liver, or any other large internal organ, as well as the lungs *. Sauvages follows Celsus in this interpretation, but distinguishes the vomica from the apostemè by making the discharge from the latter consist of pure pus, and that from the former of a mixed matter, being at first a sort of adipose mucus (mucus quidam adiposus) which at length becomes purulent. Avenbrugger, to whom we are indebted for the *Inventum novum*, or method of ascertaining diseases of the chest by percussion, takes nearly the same range, or rather carries it to a still wider extent, so as to include other depositions than that of genuine pus, and hence divides vomicæ into purulent and ichorous, meaning by the latter term the reddish yellow fluid occasionally found in a sac from the destruction of a hepatized or scirrhous lung or other organ †. Boerhaave and Cullen confine vomica to the lungs, and this in a more restrained sense than most writers; for they limit it to what has been called, though with no great accuracy, *occult vomicæ*, "vomicæ clausæ." Linnéus and Vogel, on the contrary, while they confine the term to the lungs, explain it by *open vomicæ*,

Comprehensive use of the term by Celsus here copied.

How employed by Avenbrugger.

Employed in a more restrained sense by Boerhaave and Cullen.

And still differently by Linnéus and Vogel.

* De Medicin. lib. iv. cap. viii.

† Inventum Novum ex percussione thoracis humani, ut signo, abstrusos interni pectoris morbos detegendi. Vien. 8vo. 1761.

"vomicæ apertæ," in which the pus is thrown forth profusely and suddenly. One termination of the hepatic aposteme may be regarded as a variety of this species, for, as we have observed, it sometime issues in a discharge of pus by the mouth or rectum. [Dr. Good supposed that pulmonary vomicæ consisted in conglobate glands, first enlarged by a strumous congestion, and afterwards slowly and imperfectly suppurating. Others have described them as abscesses, the result of inflammation. On the contrary, Professor Laennec sets down an abscess in the lungs from inflammation as an extremely rare case; as at least a hundred times as rare as a true vomica. He represents vomicæ as the result of the softening of a tuberculous mass of large size, and that the copious expectoration, usually taking place after their rupture, is the secretion from the sides of the large tuberculous excavation *.] Vomicæ are not, however, always so large as described by this author; they vary in size, from the diameter of a millet seed to that of an orange. The smallest rarely contain any fluid, and sometimes not even a cavity; (in which state, indeed, the editor conceives they are only tubercles) but they are often highly irritable, and maintain a very considerable degree of hectic fever. When ulceration has taken place, and pus is secreted, the irritability frequently subsides; the pulse improves, the febrile exacerbations are less frequent and violent, and the patient flatters himself he is recovering. The vomica at length bursts and disabuses him; he sinks gradually from the quantity of the daily discharge, and the confirmed hectic; or, if the disease be seated in the lungs, and the cavity extensive, he may be suffocated by the volume of pus that overwhelms the trachea.

May be related to the hepatic aposteme.

Vomica in the lungs originates in a tubercle.

Varies in size.

Patient sometimes flattered into a false hope of recovery.

Sometimes suddenly suffocated.

Bartholine gives a singular case of an occult vomica of the lungs, that, accompanied with an asthma, produced great emaciation; but was fortunately cured by the wound of a sword, the point of which passed between the ribs and opened the sac. A considerable flow of pus followed, and the patient recovered gradually from the time of the accident †.

Singular case of cure.

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* Laennec on Diseases of the Chest, p. 354. ed. 2. by Forbes.

† Hist. Anat. xiv. Cent. 6.

GEN. I. SPEC. V. Apostema vomica.

Application of the methods of percussion and auscultation.

The methods of percussion and mediate auscultation are now very generally resorted to on the continent, and occasionally in our own country, to ascertain the existence and extent of this affection when seated in the chest; the theory and employment of which the reader will find explained at some length, under the treatment of PHTHISIS*.

* Vol. iii. Cl. iii. Ord. iv. Gen. iii. Spec. v.

# GENUS II.

## PHLEGMONE.

### *PHLEGMON.*

SUPPURATIVE, CUTANEOUS TUMOUR; TENSIVE; GLABROUS; PAINFUL; AT LENGTH FLUCTUATING, AND BURSTING SPONTANEOUSLY; THE PUS UNIFORM AND GENUINE.

Gen. II. General character of phlegmon.

UNDER the last genus we took a general survey of the process and economy of suppuration, and noticed many of the most extensive and dangerous forms in which suppuration ever presents itself. We are now advancing to inflammatory affections, consisting of tumours of small extent, and either entirely confined to the integuments, or dipping but a little way below them.

In what sense used by the Greeks; loosely employed in modern times: by Cullen;

The term phlegmon, from φλέγω, "inflammo," was used among the Greeks for inflammation generally. It has long since, however, been employed in a far more limited sense by medical writers of perhaps every school, though few of them have given a very clear definition of the exact sense in which they have intended to use it; or perhaps have formed such a sense in their own minds. Thus Dr. Cullen makes it comprise a multitude of tumours or tubercles of different degrees of inflammation, some suppurative, some unsuppurative, some serous, some callous, some fleshy, some bony; as boil, minute pimple, stye, stone-pock, abscess of the breast, and spina ventosa, or carious bone; with many others altogether as discrepant; while by Sauvages it is limited, and far more correctly, to spheroidal tumours, possessing redness, heat, tension, violent throbbing pain, spontaneously suppurating. Not, indeed, essentially different from the character now offered, and involving most of its species. Vogel, however, makes it a part of its generic character, that the inflammatory tumour, in order to be a phlegmon, must be at least as large as a hen's egg; while Dr. Turton, in his useful glossary, not knowing how to reconcile the clashing descriptions which

by Sauvages; by Vogel; by Turton.

GEN. II. Phlegmone.

are thus given of it, merely explains it after the Greek manner "an inflammation," leaving the reader to determine the nature of the inflammation according to his own taste.

More correct meaning.

It is necessary, therefore, to come to something more definite; and I believe that the character now offered, embraces the common idea of phlegmon; or, if not, will propose what should seem to form a boundary for it. And thus explained, it will comprise the following species:

| | | |
|---|---|---|
| 1. | PHLEGMONE COMMUNIS. | PUSH. |
| 2. | ——— PARULIS. | GUM-BOIL. |
| 3. | ——— AURIS. | IMPOSTHUME IN THE HEAD. |
| 4. | ——— PAROTIDEA. | PAROTID PHLEGMON. |
| 5. | ——— MAMMÆ. | ABSCESS OF THE BREAST. |
| 6. | ——— BUBO. | BUBO. |
| 7. | ——— PHIMOTICA. | PHIMOTIC PHLEGMON. |

[By other writers, phlegmon is described, as inflammation of the cellular membrane of any part of the body; but as this tissue is also affected in erysipelas, the definition fails. The editor, in his surgical writings, always understands by phlegmonous inflammation, the healthy simple form of this affection, particularly when situated near the surface of the body. But there is every reason to presume, that an inflammation of a similar character often affects many of the deeply seated parts. Such an opinion, he believes, will be found to agree with the doctrines inculcated, and the facts pointed out, by Mr. Hunter*.]

* See Hunter on the Blood, Inflammation, &c. 4to.

## SPECIES I.

## PHLEGMONE COMMUNIS.

### *PUSH. COMMON PHLEGMON.*

TUMOUR COMMON TO THE SURFACE; BRIGHT-RED; HARD; DEFINED; HEMISPHERICAL; POLARIZED; GRADUALLY SOFTENING AND BURSTING AT THE POLE.

Gen. II. Spec. I.

In vernacular language this species is denominated a *push;* and in size has a near approach to a boil, or furuncle; but essentially differs from it in having its pus uniform and mature, while that of the boil is always intermixed with a core. It is commonly a mark of high entonic health, or a phlogotic diathesis; and rarely requires any other medical treatment than bleeding, or a few cooling purgatives.

How differs from a boil.

General character.

Habit in which it often occurs.

Where, however, pushes appear in crops, and especially in successive crops, they support a remark we had occasion to make in opening the present order; that, in conjunction with the phlogotic diathesis, there is probably a peculiar susceptibility of irritation; since we frequently find persons in the highest health, with firm and rigid fibres, pass great part, or even the whole of their lives, without any such affection as the present. Such susceptibility is far more common, indeed, to a habit of an opposite character, but it seems from this, as well as from other circumstances, not unfrequently to inhere in the temperament we are now contemplating.

## SPECIES II.

## PHLEGMONE PARULIS.

### *GUM-BOIL.*

TUMOUR SEATED ON THE GUMS; DEEP-RED; HARDISH; UNDEFINED; PAIN OBTUSE.

GEN. II. SPEC. II. General character.

THIS is sometimes limited to the substance of the gums; and sometimes connected with a caries of a tooth or socket. In the first variety, it is a disease of only a few days' duration, and ceases almost as soon as it has burst or is opened: in the second, it will often continue troublesome till the carious tooth is extracted, or the carious socket has exfoliated; or the whole of its texture is absorbed; in which case the tooth will become loose, and may at length drop out spontaneously.

Swediaur once saw this disease produced in a man, otherwise sound, in consequence of a suppression of an habitual hemorrhoidal flux, accompanied with a loosening of the wise and incisor teeth. In women he had frequently met with the same from obstructed menstruation*.

Suppuration to be encouraged,

Gum-boils, and especially where connected with a morbid condition of the subjacent teeth, or their alveoli, rarely disperse without passing into the suppurative stage: and hence the means of prohibiting this termination are usually tried in vain, much time is lost, and protracted pain encountered. For these reasons it is better to encourage, than to repel, the suppurative process, by warm cataplasms or fomentations; and to open the tumour as soon as it begins to point. An early opening is of importance; for, from the toughness and thickness of the walls of the abscess, it is seldom that the confined pus obtains a natural exit with sufficient freedom; while, in some instances, the ulceration assumes a sinuous character, or works into the substance of the cheeks, and at length opens on their ex-

and the tumour soon opened.

* Nov. Nosol. Meth. Syst. ii. 437.

ternal surface. The worst and most painful gum-boils are those which form on the dentes sapientiæ; the swelling, from the violence of the irritation, spreads rapidly and widely; so that the entire cheek is sometimes involved in it, the neck indurated, and the eye closed.

GEN. II. SPEC. II. Phlegmone parulis. Gum-boil, where severest.

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## SPECIES III.

## PHLEGMONE PAROTIDEA.

### *PAROTID PHLEGMON.*

TUMOUR SEATED UNDER THE EAR; REDDISH; HARD; PAIN OBTUSE; SUPPURATION SLOW AND DIFFICULT.

GEN. II. SPEC. III. Where arranged by Cullen.

IT is not a little singular, that Dr. Cullen, who extends the genus of phlegmone wide enough to embrace, not only inflammation of the ear, and of the breast, gum-boil, and phimosis, but also furunculus, varus, gutta rosea, stye, and, as already observed, several affections of the bones, should have banished suppurative inflammation of the parotid and inguinary glands, not only to another genus, but to a very remote part of his system; where they occur in the class and order of *local tumours*, in company with warts, corns, and sarcomata, which have naturally no inflammatory character. Here, too, they are conjointly described under the generic name of bubo, with the generic character of "glandulæ conglobatæ tumor suppurans;" a definition which does not apply to the parotid gland, whose structure is not conglobate but conglomerate. The present, therefore, is the proper genus for including suppurative inflammation of the parotid and inguinal, as well as of the mammary glands.

loosely and incorrectly.

Phlegmonous inflammation of the parotid gland offers us the two following varieties:

| | |
|---|---|
| Simplex. | Incarning and cicatrizing easily. |
| Simple parotid phlegmon. | |

GEN. II. SPEC. III. Phlegmone parotidea.

β Maligna. Malignant parotid phlegmon. Accompanied with a foul slough, and incarning with difficulty.

α P. parotidea simplex. Process, though slow, regular and healthy. Illustrated.

In the SIMPLE OR BENIGN VARIETY, though the suppurative process is slow and inactive, the incarnation subsequent upon the breaking of the abscess is regular and unobstructed. I was requested, not long ago, to see a young lady of fifteen years of age, who had been troubled with this species of phlegmon for more than three months; there had been, for about a fortnight, an evident pointing towards the surface, and a feel of irregular fluctuation; it afterwards broke, a large quantity of good pus drained away daily, and the tumour, which at first was extensive and hard, by degrees very considerably diminished, and clustered or divided into lobes, and at length disappeared altogether. Her general habit was relaxed, but did not seem to be strumous. She had menstruated earlier than usual, and was of a disposition peculiarly sprightly and cheerful. The local treatment at the commencement was leeches, frequently applied, and alternated with mercurial plaster. But no benefit proceeding from the discutient plan, lotions of water and liquor ammoniæ acetatis, in equal parts, were afterwards employed to aid the suppurative process.

Abscesses sometimes very large. Pus sometimes removed by metastasis. Examples.

The abscess in some cases of this variety is of considerable magnitude, and consequently the discharge of pus very large. And we have some instances on record in which the pus has been absorbed and carried off by metastasis to some remote organ. Dr. Saunders gives a case in which it passed away by the rectum*; Alix, by a fontinel at the navel†; and the Transactions of Natural Curiosities, by the bladder‡. It has sometimes been confounded with parotitis or mumps; and has hence been said to sympathize with one or both testicles in males, and to be contagious. Cavallini has made this mistake in his collection of surgical cases§; and we find a like error in the Memoirs of Toulouse‖.

Has been confounded with mumps.

* Observations on the Red Peruvian Bark.

† Obs. Chirurg. Fascic. i.

‡ Vol. i. obs. 39.

§ Collezione di Casi Chirurgici, i. 447.

‖ Histoire et Mémoires de l'Academie de Toulouse, tom. i. 1782.

The SECOND VARIETY of parotid phlegmon is of a malignant character. It seldom appears in early life, and in females sometimes follows the cessation of the catamenia. It is still slower in its progress than the preceding; and when at length it breaks, the pus is imperfect and cheesy, or serous. It is also profuse and protracted to a long period and accompanied with foul sloughs. The patient is debilitated by the discharge, the irritation excites hectic fever, and the case frequently terminates fatally. Bark, hyoscyamus, conium, and similar tonics and narcotics have been tried; but for the most part with little success.

Gen. II. Spec. III. β P. parotidea maligna.

Termination.

Treatment.

It assumes, occasionally, a scirrhous hardness, and grows to a considerable extent. It has been extirpated, but with variable success, when upwards of three pounds in weight*; sometimes with a cure†; but, at other times, it has degenerated into a foul, bleeding, extensive, and fatal ulcer‡.

Has been extirpated in a scirrhous state when of great weight.

Treatment.

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## SPECIES IV.

## PHLEGMONE MAMMÆ.

### *ABSCESS OF THE BREAST.*

TUMOUR SEATED IN THE BREAST; PALE-RED; HARDISH; IN IRREGULAR CLUSTERS; WITH A PRICKING AND ACUTE PAIN; SUPPURATION QUICK AND COPIOUS.

THIS is sometimes produced by some accident, as that of a blow or severe pressure; but more generally proceeds from a redundancy and consequently undue stimulus of milk, when first secreted after child-birth, so that the lacteal tubes have not time to enlarge sufficiently for its reception: in which last instance it is usually called MILK-

Gen. II. Spec. IV. How formed.

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* Kaltschmied, Pr. de Tumore scirrhoso trium cum quadrante librarum glandulæ Parotidis extirpato. Jen. 1752.

† Siebold, Parotidis scirrhosæ feliciter extirpatæ Historia, Erf. 1791.

‡ Commerc. Lit. Nor. 1733–8.

GEN. II. SPEC. IV. Phlegmone mammæ.

ABSCESS. [Professor Gibson conceives, that one of the most common causes of the mammary abscess, is the custom prevalent, among nurses, of feeding women after delivery upon nutritious, high-seasoned, and stimulating articles, instead of letting them observe a proper regimen, calculated to obviate inflammation*.] "In either case the suppuration commonly begins in many distinct portions of the inflamed part; so that it is not one large circumscribed abscess, but many separate sinuses, all of which generally communicate. Now it usually happens that only one of these points externally, which being either opened, or allowed to break, the whole of the matter is to be discharged this way. But we sometimes find that the matter does not obtain a ready outlet by this opening, and then one or more of these different sinuses make distinct openings for themselves†."

Usually a combination of separate sinuses:

and hence often opens in separate outlets.

Whence the cure tedious.

In this case the complaint is usually protracted and tedious, though, where the constitution is good, the issue is always favourable.

Mammary abscess with numerous winding sinuses and fungi.

[Mr. Hey has described one variety of mammary abscess, which proceeds more slowly to suppuration than ordinary cases. The matter is often discharged by several openings, which become fistulous and lead to narrow sinuses, that wind in every direction in the breast. When these sinuses are laid open, they appear nearly filled with a soft purple fungus‡. Unless properly treated, it is a case that has little chance of cure.

Treatment.

In the early stage of phlegmonous inflammation of the breast, resolution should be attempted by means of leeches, gentle suction of the breast with the mouth or nipple-glass; purgatives and low diet. But, if suppuration occur, the progress of the matter to the surface should be expedited by warm poultices. When the matter is deeply seated, and approaches the surface very slowly, and the patient is much reduced by severe pain and sleepless nights, an opening may become necessary. The poultice must be continued until the discharge nearly ceases, and then superficial dressings will complete the cure. If sinuses

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* See Gibson's Institutes of Surgery, vol. i. p. 205. Philadelphia, 1824.

† Hunter on Blood, p. 469.

‡ See Hey's Practical Obs. in Surgery, 3d. edit. p. 522.

remain, the pressure of a well applied roller will soon obliterate them. In the variety, described by Hey, he recommends laying open all the sinuses; but, Professor Gibson has found that in two very extensive and obstinate cases, the milder plan of passing a seton into each of the sinuses accomplished a cure*.] GEN. II. SPEC. IV. Phlegmone mammæ.

This sort of phlegmon was called by Dioscorides sparganosis from the Greek term σπαργάω, "tumeo, distendo;" and after him it has still been so denominated by various modern writers. Sparganosis, however, was employed by Dioscorides in a collective sense, to signify not only milk-abscess, but a variety of tumours, and other diseases supposed to depend upon an overflow, suppression, misdirection, or depraved secretion of milk; and especially those which have since been described under the general term galactirrhœa. Many of these have little or no connexion with each other; and particularly abscess of the breast, and that peculiar swelling of the lower limb which occasionally takes place soon after child-birth, to which the term is etymologically best applied, and to which therefore it is restrained in the present system. By Dioscorides called sparganosis, which also imported other diseases, that have little connexion.

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## SPECIES V.

## PHLEGMONE BUBO.

### *BUBO.*

TUMOUR SEATED IN A CONGLOBATE GLAND; REDDISH; HARD; DIFFUSE; NOT EASILY SUPPURATING; OPENING WITH A CALLOUS EDGE.

BUBO is a Greek termed borrowed from the Hebrew verb בע or בעה (bo or boa), importing "to swell," and merely doubled according to the analogy of the language, to give it an intense or superlative power, whence bobo, or bubo. GEN. II. SPEC. V. Term whence derived.

* Institutes, &c. vol. i. p. 206 and 207.

GEN. II. SPEC. V.

Ordinary seat. Causes. Treatment. Buboes are chiefly found in the inguinal and axillary glands. They are sometimes simple glandular inflammations, unconnected with any constitutional or foreign evil, and require nothing more than the common treatment; but they are often a result of constitutional affection, and very frequently a symptom of lues and pestis, in which cases they can only be cured by curing the specific taint.

Cured by vomits. Mr. Hunter asserts that he has seen buboes cured by vomits, after suppuration has advanced.

Has been confounded with a scrofulous tumour. In an early stage, the inguinal bubo has been confounded with a scrofulous tumour. A nice finger will generally discriminate them with ease. The bubonous tumour is smooth, uniform, and obtusely painful: the scrofulous is, to the touch, and sometimes to the eye, a cluster of small tubercles without pain.

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## SPECIES VI.

## PHLEGMONE PHIMOTICA.

### *PHIMOTIC PHLEGMON.*

TUMOUR SEATED IN THE PREPUCE; DIFFUSE; OBTUSELY PAINFUL; IMPRISONING THE GLANS, OR STRANGLING IT BY RETRACTION.

GEN. II. SPEC. VI.

Produced under two states of the glans. If, at the attack of inflammation, the prepuce be in its natural state and cover the glans, it cannot be drawn back, and the glans is imprisoned. If it should accidentally have been retracted, or be naturally short and truncated, it cannot, after the inflammation has firmly fixed itself, be drawn forwards, and the glans is strangled. And hence the species offers us two varieties:

| | |
|---|---|
| α Incarcerans. Incarcerating phimosis. | The prepuce protracted and imprisoning the glans. |
| β Strangulans. Strangulating phimosis. | The prepuce retracted and strangling the glans. |

The FIRST VARIETY alone is denominated phimosis by some writers, the SECOND being distinguished by the term paraphimosis, or circumligatura. But the inflammation is one and the same, and the same specific name should express it; for the difference is a mere accident. Gen. II. Spec. VI. Phlegmone phimotica. Paraphimosis, what.

This inflammation, like the last, though often produced by common causes, and hence perfectly simple, is often, also, the result of a specific virus, as in lues and blenorrhœa. Causes.

It arises frequently with great rapidity; the prepuce is prodigiously distended with effused serum, and the mucous glands of the internal surface secrete an enormous quantity of pus before there is any ulceration or breach of surface. Often advances rapidly.

If the prepuce be retracted violently, and the glans strangulated, and cold applications, and topical bleedings prove ineffectual, it is often necessary to divide the prepuce to set the glans at liberty. And occasionally it is also necessary to perform the same operation when the glans is imprisoned by a protraction of the prepuce: for ulceration is apt to take place under these circumstances in either case, and the matter soon becomes erosive: as much of it as possible, however, should be washed out with a syringe several times a-day, and an astringent solution be afterwards injected, consisting of alum dissolved in water in the proportion of about a scruple to a quarter of a pint. Treatment.

The imprisoning phimosis is said to occur not unfrequently from laborious exertion in a very narrow vagina*. I have not met with this result, but often with a lacerated prepuce. In many instances of both kinds, relief has been easily obtained by grasping the penis with a very cold hand, and dexterously urging the prepuce forward or drawing it backward according to the nature of the case†.

When the inflammation is very violent, whether in the strangulated or retracted variety, and surgical attention has been neglected, gangrene will readily ensue, and an amputation of a smaller or larger portion of the penis may be absolutely necessary. In an instance of an amputation of this kind, recorded by Mr. Jamieson of Kelso, in the Edinburgh Medical Essays, the whole of the glans penis Treatment. Sometimes followed by gangrene.

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* Essich, in Ziegenhagen Anweisung alle venerische Krankheiten—zu behandeln. A. D. B. xcv. 421.

† Andree, on the Gonorrhœa—Heckeer, Von Venerischen Krankheiten, &c.

GEN. II. SPEC. VI. Phlegmone phimotica.

Mortified glans has regerminated.

was restored by a process of pullulation: the new shoots having at first been mistaken for fungus, and attempted to be destroyed by escarotics. The fresh glans was well shaped and proportioned*. [The editor scarcely need observe, that the practice of amputating the penis on account of the risk of mortification from paraphimosis, is entirely relinquished by all the best modern surgeons; and that even the removal of a portion of the prepuce for the relief of phimosis, is much less frequently practised than it used to be. Both cases, when dependent on inflammation, generally yield to milder treatment. In paraphimosis, that resists common means, an incision through the constriction will often prevent gangrene; and it is only under very particular circumstances requiring the glans to be immediately exposed, or where the phimosis depends upon a naturally long constricted foreskin, or one permanently thickened and lengthened by disease, that the removal of any portion of the prepuce is necessary.]

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* Vol. v. art. XXXVI.

# GENUS III.

## PHYMA.

### *TUBER.*

IMPERFECTLY SUPPURATIVE, CUTANEOUS, OR SUBCUTANEOUS TUMOUR; THE ABSCESS THICKENED, AND INDURATED AT THE EDGE; OFTEN WITH A CORE IN THE MIDDLE.

Gen. III.

Import of the term: formerly very loose and confused.

Phyma, a Greek term importing a tuber, tubercle or small swelling, from φύω, "produco, erumpo," was used among the Greek and Roman physicians with great latitude and no small want of precision: sometimes, as by Hippocrates and Paulus of Ægina, being applied to scrofulous and other imperfectly suppurative tumours; sometimes, as by Celsus and Galen, to tumours perfectly and rapidly suppurative, larger than a boil, but less painful and inflammatory, and without a core or ventricle: and sometimes by other writers, as Celsus also informs us, to fleshy excrescences or warts on the glans penis, which it was then the custom to destroy by caustics. And in consequence of this vague sense of the term, and the latitude of its original meaning, the great body of the Galenists, as Sauvages observes, applied it to protuberances of every kind.

Its exact meaning has hence excited discussion.

Modern writers have been at a loss in what exact signification phyma should be employed. Linnéus and Cullen have rejected it. Sauvages and Sagar have used it as the name of a distinct and separate order. Vogel, following the example of Hippocrates and Paulus, has reduced it to a genus of imperfectly suppurative and glandular tumours; and, as a genus, it thus occurs in Dr. Willan's table of arrangement, including boils, carbuncles, and similar inflammations as its species. This seems to be the most accurate sense; and as such it is adopted in the present system, and made to include stye, boil, sycosis, and carbuncle; in all which we find some degree of im-

Most accurate import.

Common character.

GEN. III. Phyma. perfection in the suppurative or the ulcerative process of these small abscesses, or in both conjointly; and hence the pus is foul and sanious, or the walls or edges of the abscess are thick and indurated, or the dead matter is not completely carried off, and remains behind in the shape of a core or a fungus, sometimes black and spongy, and sometimes excrescent and granulating.

The following, therefore, are the species included under it:

| | | |
|---|---|---|
| 1. | PHYMA HORDEOLUM. | STY. |
| 2. | ——— FURUNCULUS. | BOIL. |
| 3. | ——— SYCOSIS. | FICOUS PHYMA. |
| 4. | ——— ANTHRAX. | CARBUNCLE. |

## SPECIES I.

## PHYMA HORDEOLUM.

### *STY.*

TUMOUR SEATED ON THE VERGE OF THE EYE-LID; GRANULAR; HARD; REDDISH; SORE TO THE TOUCH; SUPPURATION CONFINED TO THE POINT.

GEN. III. SPEC. I. Origin of the vernacular name. THE vernacular term *sty*, or as it is sometimes written *stian*, is to be met with in the earlier writers, who obtained it from the Saxon, in which *stihan* (ꝑtiʒan) signifies "a rising, springing up, or ascent;" and hence in Bede's Bible, Mar. iv. 7. ꝑtiʒon ðа þoꝼnaꝛ (*stihon tha thornas*), "up spring the thorns." Wickliffe spells the old English derivation *stigh*, but Spenser, who uses the word frequently, drops both the last letters of Wickliffe, as in the following couplet:

> To climb aloft and others to excel,
> That was ambition, and desire to STY.

Sometimes produced by hard drinking. From the hardness of the margin of the tumour, and the imperfection of the suppurative process, Sauvages compares it to a small boil; and asserts that it is often the result of a morbid state of the stomach; adding, that he

knew a man who uniformly had a sty after drinking ardent spirits. The inflammation, though often very troublesome while it lasts, for the most part readily subsides upon the breaking of the minute abscess, or puncturing it at its apex when mature. GEN. III. SPEC. I. Phyma hordeolum.

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## SPECIES II.

## PHYMA FURUNCULUS.

### *BOIL.*

TUMOUR COMMON TO THE SURFACE; DEEP-RED; HARD; CIRCUMSCRIBED; ACUTELY TENDER TO THE TOUCH; SUPPURATING WITH A CENTRAL CORE.

THE boil is a push with a central core; and like the push is found in persons of an entonic or phlogotic habit, with a peculiar susceptibility of irritation: on which account it often makes its appearance successively in different parts of the body, and sometimes synchronously, so that we meet with a crop at a time. This tumour is therefore chiefly found in persons of high health and in the vigour of youth. GEN. III. SPEC. II. Character.

[It is a hard, painful, and highly-inflamed tumour, of a conical shape, the base of which is below, and the apex slightly elevated above the level of the skin. The colour of the tumour is of a dusky red inclining to purple, and its summit is tipped by a whitish pustule or eschar, beneath which is lodged a mass of disorganized cellular membrane, commonly called a *core*. Although the tumour always suppurates, its progress is slow, and the matter is sanious and ill-conditioned*.]

The existence of a core offers a singularity in this affection that is well worth attending to, and shows that, from some cause or other, the ulcerative part of the process is imperfect. Upon Mr. Hunter's hypothesis, this must de- Core.

* See Gibson's Institutes of Surgery, vol. i. p. 48.

Gen. III. Spec. II. Phyma furunculus.

How accounted for on Hunter's hypothesis.

Pus probably less solvent than ordinarily.

pend upon a weak action of the absorbents; but as we have already endeavoured to show, that the material to be removed must be prepared for absorption, and conveyed to the mouths of the absorbent vessels before absorption can take place, and have suggested, that it seems to be the office of the secreted pus to accomplish this purpose, it is probable that, in the furunculus, the pus, from some cause or other, is not quite genuine, and is possessed of a less solvent power than in common abscesses: whence a part of the dead matter remains attached to the living after the hollow has burst, and is thrown off from the base by sloughing. [In estimating the value of this theory, one fact should be taken into the account, namely, that it is the nature of a boil to produce a central core or small slough of the cellular membrane; whereas many common abscesses occasion no sloughs whatever, so that the solvent power of their matter on such productions is not in reality tried. The idea that the solids are melted down, as it were, into pus is now completely exploded.]

The mode of treatment is simple. The diathesis should be lowered by purging, and, if necessary, by bleeding. [The best local applications are poultices and fomentations; and, when the apex of the swelling becomes soft, it may be opened, then poulticed until the core is discharged, and afterwards dressed with a solution of lunar caustic or a stimulating ointment.]

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## SPECIES III.

## PHYMA SYCOSIS.

### *FICOUS TUBER.*

TUMOUR EXCRESCENT, FLESHY; FIG-SHAPED; SPROUTING FROM THE HAIRY PARTS OF THE HEAD OR FACE; GREGARIOUS; OFTEN COALESCING; DISCHARGE PARTIAL AND SANIOUS.

Gen. III. Spec. III.

The Greeks gave the name of sycosis from σῦκον, "a fig,"

to various tubers and excrescences, the shape of which was conceived to resemble that of a fig. By Celsus, however, it is limited to a particular kind of inflammatory and imperfectly suppurative tuber of the head and face. Vogel has understood the term nearly in the same sense; and Dr. Bateman has, hence, correctly described it as such in his list of cutaneous diseases.

Gen. III. Spec. III. Specific name, whence derived. How used by Celsus: by Vogel: by Bateman.

It is seated sometimes on the beard, and sometimes in the hair of the head. In the former case it consists of small tumours, hard, roundish, pea-sized; commonly in clusters; occasionally confluent, or running into one another; and spreading from ear to ear; the discharge is small in quantity and of a glutinous texture, whence the beard becomes filthily matted.

Where seated. General character when on the beard.

The variety that appears on the head consists of softer tumours, of different sizes, and in clusters; they are seated among the hair, and throw forth from a fungous surface an ichorous, copious, and fetid discharge. It is not often that this complaint is connected with any constitutional affection: and offensive as it is, it will generally be found to yield to cleanliness, and mild astringents; of which one of the best is starch powder alone, or combined with an equal proportion of calamine. It makes an approach to one or two of the species of porrigo, but has characters sufficiently marked to keep it distinct, and to determine the present to be its proper station.

General character when on the head. Resembles porrigo.

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## SPECIES IV.

## PHYMA ANTHRAX.

### *CARBUNCLE.*

TUMOUR COMMON TO THE SURFACE; FLAT; FIRM; BURNING; PENETRANT; LIVID AND VESICULAR; OR CRUSTY ABOVE, WITH A SORDID GANGRENOUS CORE BELOW; IMPERFECTLY SUPPURATIVE.

Gen. III. Spec. IV.

Anthrax is a Greek term correspondent to the Latin

GEN. III. SPEC. IV. Phyma anthrax.

carbunculus or carbuncle; literally a small live-coal, so denominated from the redness and fiery heat of the inflammation.

Specific term, whence derived.

The specific definition sufficiently points out its relation to the furuncle or boil, especially when the latter assumes an unkindly or malignant character from something peculiar in the part or in the constitution. "The inflammation that produces the carbuncle is, however, of a different nature from any of the former: it is stationary," observes Mr. Hunter, "with respect to place, and is pretty much circumscribed, forming a broad, flat, firm tumour. It begins in the skin, almost like a pimple, and goes deeper and deeper, spreading with a broad base under the skin in the cellular membrane. It produces a suppuration, but not an abscess; somewhat similar to the erysipelatous, when the inflammation passes into the cellular membrane; for, as there are no adhesions, the matter lies in the cells where it was formed, almost like water in an anasarca. This inflammation attacks more beyond the middle age than in it, and very few under it. It is most common in those that have lived well. I never saw but one patient of this kind in an hospital. It appears to have some affinity to the boil; but the boil differs in this respect, that it has more of the true inflammation, therefore spreads less, and is more peculiar to the young than the old, which may be the reason why it partakes more of the true inflammation *."

Relation to the furuncle. In what it differs.

General character.

Occurs chiefly in weakly habits of a peculiar kind.

The carbuncle occurs chiefly, perhaps uniformly, in weakly habits, and hence, often in advanced life. But it is not all debilitated persons who have inflammations, that exhibit this disease: and we have here, therefore, another striking proof of the influence of idiosyncrasy, or a peculiarity of constitution upon the general laws and progress of inflammation; or of a peculiarity of that part of the constitution in which the inflammation shows itself: and but for which, the inflammatory stages of the present disease would in all probability succeed each other in regular order, and the anthrax be reduced to the character of a common and benign abscess. Of the nature of this peculiarity we are too often able to trace out little or nothing;

The peculiarity unknown.

* On Blood, Inflammation, &c. Part ii. chap. iv.

but so long as it continues, we have only a small chance of bringing the inflammation to a successful issue. Gen. III. Spec. IV. Phyma anthrax.

The carbuncle shows itself under the two following varieties:

| | | |
|---|---|---|
| α | Pruna. Escar-carbuncle. | With a black crust; and oozing an erosive ichor, or sanies. |
| β | Terminthus. Berry-carbuncle. | Core or fungus spreading in the shape and colour of the pine-tree berry. |

The FIRST of these varieties was called pruna by Avicenna, from its assuming the colour and often the oval figure of the sloe, or fruit of the *prunus spinosa*, Linn. α P. Anthrax pruna.

The SECOND derives its name from its assuming the figure and blackish-green colour of the fruit or berry of the pine-nut, or τέρμινθος of the Greeks, the *pinus Abies*, Linn. named by the Latins terebinthus; whence it has been called terminthus and terebinthus indifferently. β P. Anthrax terminthus.

As the carbuncle is an inflammation of great weakness set down on a peculiar predisposition, it sometimes shows itself among feeble infants in warm climates. According to Tournefort, in his Travels through the Levant, it attacks them chiefly in the back part of the throat, and proves quickly fatal. He describes it as an endemic in his day, among the islands of the Archipelago. General remarks. Where chiefly found.

In more advanced life, for the same general reason, we meet with it frequently in those who have debilitated their frames by an excess of good living, and are verging on the feebleness of age. We may hence also account for its appearing in an early stage of the plague, the most debilitating disease in the whole catalogue. It sometimes shows itself in great numbers almost on its onset, or *m'drop* as the Arabians call it, who distinguish carbuncles by the name of jimmerat.

When unconnected with any other disease, a cure has been attempted by local stimulants, as cataplasms of tobacco and sal ammoniac, which has been a common practice in Russia; or of horse-radish*, or stone-crop (*sedum* Treatment.

* Paré, Lib. xxi. cap. 32.

GEN. III. SPEC. IV. β P. Anthrax terminthus.

*acre**). Cantharides†, camphor ointments, and lotions of zinc or mercury have also been tried. More generally, however, it has been attempted to be destroyed or extirpated. Arsenic was recommended for this purpose as early as the age of Agricola; and has been employed in various forms, from that of orpiment to that of Plunket's caustic: above all which, however, Le Dran preferred corrosive sublimate. Riverius used other caustics, and Pouteau the actual cautery; which has, indeed, been very successfully and skilfully adopted of late in a variety of similar affections by M. Maunoir. But radical success must, after all, entirely depend upon supporting and giving strength to the system by cordials and tonics; for if this cannot be accomplished, it is perfectly clear, that the predisposition will be neither subdued nor subside spontaneously: that the ulcerations will not heal, and the system must gradually sink under their constant discharge and irritation.

Arsenic. Caustics.

Cordials and tonics.

[The practice most approved in modern times is to apply in the incipient stage fomentations and emollient poultices to the part, and to have recourse, at the same time, to antiphlogistic treatment in moderation. For the relief of the pain, opium is freely prescribed. After a short time, the antiphlogistic is exchanged for the tonic treatment, with bark, cordials, wine, and a nutritious diet. Some surgeons make an early and free incision in the swelling; while others apply caustic to the skin covering the mass of matter and sloughs,]

Carbuncle of cattle.

The carbuncle of cattle is frequently owing to the poisonous sting of various insects; and hence, a similar cause has, by some practitioners, been supposed to exist in mankind. Pallas suspects the *furia infernalis;* while others have mentioned the *sirex gigas* or large-tailed wasp. It is probable that these may have been occasional causes, where there has been a predisposition to the disease in the constitution.

How far connected with the human, in origin.

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* Buchoz und Marquet neueste Heilkunde, Nüremb. 1777.

† Riverius, Observ. Med. lent. iv.

# GENUS IV.

## IONTHUS.

### *WHELK.*

UNSUPPURATIVE, TUBERCULAR TUMOUR; STATIONARY; CHIEFLY COMMON TO THE FACE.

IONTHUS (ἴονθος) is literally a "violet, or purple eruption, or efflorescence," from ἴον, viola; whose colour is frequently that of a welky or bubukled face. It includes all those firm and indurated pimples, of whatever description, unconnected with fever, and having a subcutaneous base, with which the face is often disfigured, whether solitary, gregarious, or confluent. These may be comprehended under the two following species: GEN. IV. Generic term, import of.

1. IONTHUS VARUS. STONE-POCK.
2. ——— CORYMBIFER. CARBUNCLED-FACE. ROSY-DROP.

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## SPECIES I.

## IONTHUS VARUS.

### *STONE-POCK.*

TUMOUR RED; HARD; PIMPLY; DISTINCT; GREGARIOUS; SORE TO THE TOUCH; SOMETIMES OOZING A LITTLE FLUID AT THE TIP.

THIS sort of pimple eruption is so common, that there is no one but has seen examples of it; and few who have not at times given examples of it in their own persons. It exhibits two varieties: GEN. IV. SPEC. I.

| | | | |
|---|---|---|---|
| GEN. IV. SPEC. I. Ionthus varus. | α | Simplex. Simple Varus. | Broad-based, bright-red, solid. |
| | β | Punctatus. Maggot-pimple. | Tipped with a black dot, and discharging, on pressure, a grub-like concretion of mucus. |

General character. The first, on being firmly pressed with the finger, oozes, at times, a little limpid serum, but no concrete mucus; and even for this it is necessary to make the pressure harder than for the discharge of the mucus in the maggot-pimple. The mucus concretes in a follicle, or natural passage; and hence there is less inflammation and soreness than in the simple varus: yet the sides and root of the follicle are thickened and indurated: and hence the papulous elevation.

Cosmetics. Gouland's lotion and a few other empyrical cosmetics, as white paint of bismuth or cerusse, alike deleterious in their effects, and apt to produce palsy, are a common resource among the multitude for both these varieties. They have sometimes succeeded, with little other sacrifice, than the exorbitant price which the purchaser has had to pay for them; but the cure has far more frequently been bought (if there have been a cure at all) at an expense of a ruined constitution, and at the exchange of a temporary local disfigurement for a life of general ill health.

Causes. Both varieties are occasionally produced by some internal affection, chiefly of the stomach; as a sudden chill from taking a draught of cold water or cold milk; or eating cold vegetables, as turnips, cucumbers, and melons, when in a state of great heat and perspiration. Catching cold in the feet has sometimes produced the same effect. These are cases of direct sympathy: the torpitude of one organ being communicated to another, which is predisposed to associate in its action.

Treatment, general. They have occasionally yielded to powerful sudorifics, and especially when combined with narcotics, as Dover's powder in strong doses taken for several nights in succession, the part affected being at the same time wrapped in flannel. They have also yielded to metallic and terebinthinate stimulants, as eight grains of Plummer's pill, and a scruple of camphor, made into six or eight pills, and taken daily for ten days or a fortnight. But they gene-

rally require some local irritant at the same time, as savine cerate, the camphor or mercurial liniment, or the stronger liniment of ammonia, used so as to excite blistering. Yet after they have resisted these and other preparations with great obstinacy for years, they have at length vanished beneath a severe attack of fever: or have disappeared spontaneously. The complaint, however, is occasionally hereditary, and bids equal defiance to time, to fevers, and to medicines. Dr. Darwin, under the name of gutta rosea, has a copious collection of cases in point; some of them drawn from old maids, and others from elegant young ladies, and each duly authenticated with initials, to which the reader may turn at his leisure. Among the rest is that of "Miss L. a young lady about eighteen, who had tried variety of advice for pimples over the greatest part of her face, in vain. She took rhubarb five grains, and emetic tartar, a quarter of a grain, every night for many weeks, and blistered her face by degrees all over, and became quite beautiful*."

Gen. IV. Spec. I. Ionthus varus. Local. Illustrated.

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## SPECIES II.

## IONTHUS CORYMBIFER.

### *CARBUNCLED-FACE. ROSY DROP.*

TUMOURS CONFLUENT; CORYMBOSE; MOTTLED WITH PURPLE; OFTEN DISFIGURING THE NOSTRILS WITH PENDULOUS LOBES.

As the preceding species is produced by a sympathy of the excernents of the skin with a torpid state of the stomach, the present is produced by a like sympathy with the liver: and hence it is proverbially regarded as a proof, that those who are thus disfigured, have indulged too largely in wine and other spirituous potations. So Shak-

Gen. IV. Spec. II. Causes.

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* Zoonom. Cl. ii. i. iv. 6.

GEN. IV. SPEC. II. Ionthus corymbifer.

speare, in describing the physiognomy of a hard drinker, tells us that "his face is all bubukles, and whelks, and knobs, and flames of fire!!" And, in like manner, as I learn from Dr. Perceval, the common name for these protuberances in Ireland is GROG-BLOSSOMS.

Tumours usually very irritable.

The tumours in this species are usually more susceptible of irritation, than in the preceding; or, in other words, the cutaneous vessels are in a state of increased debility; and hence they are exacerbated by cordials or exposure to heat.

Treatment. Gradual change of diet.

As this is, in most cases, an habitual affection, or one of long standing, no change of diet, however desirable, should be made suddenly, for this would run a risk of producing dropsy, and, perhaps, paroxysms of atonic gout: but a gradual change to a more sober and temperate regimen is highly to be recommended: and, in the mean time, the patient should have his bowels kept regularly open with warm eccoprotics, as the extract of colocynth and myrrh pill, and be put upon a course of equitation, or such other exercises as may recruit the spirits and invigorate the system generally, in which benefit the liver will become a chief participant. The tumours may not, perhaps, totally disappear: but they will often diminish in magnitude, and assume a healthier hue: or at least we shall hereby prevent them from any farther enlargement, and especially from passing into that carbuncular ulceration we have just noticed.

Aperients.

# GENUS V.

## PHLYSIS.

### *PHLYSIS.*

ULCERATIVE, SUBCUTANEOUS TUMOUR; FLAT; TENSIVE; GLABROUS; DIFFUSED; HOT; THROBBING; AT LENGTH FLUCTUATING WITH AN ICHOROUS MATTER.

PHLYSIS, from the Greek φλύζω, "ferveo," was formerly employed in a very indeterminate meaning to express cutaneous eruptions filled with any kind of fluid, whether purulent or ichorous: more generally, however, it had a bearing towards the sense of ichorous or vesicular pimples. Dr. Willan has, on this account, correctly limited phlyctænæ, derived from the same root, to this import, in his Table of Definitions: and such is the restriction of phlysis, and all its compounds in the present system. GEN. V. Origin of generic name.

Of the genus now offered, there is but one well-ascertained species, the paronychia, or whitlow.

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## SPECIES I.

## PHLYSIS PARONYCHIA.

### *WHITLOW.*

INFLAMMATION SEATED ABOUT THE NAILS AND ENDS OF THE FINGERS; PAIN ACUTE AND PRICKING, SHOOTING UP THE HAND.

UNDER this species are included the following varieties: GEN. V. SPEC. I.

| | |
|---|---|
| α Cutanea. Cutaneous whitlow. | Effusion immediately under the skin. |

| | | | |
|---|---|---|---|
| GEN. V. SPEC. I. Phlysis paronychia. | β | Tendinis. Tendinous whitlow. | Effusion among the tendons. |
| | γ | Periostei. Malignant whitlow. | Effusion pressing on the periosteum. |

In the FIRST VARIETY, the ichor, or pus, is poured forth between the skin and the subjacent tendons, to which, however, it is limited.

In the SECOND, it insinuates itself between the tendons and the periosteum. And in the THIRD, between the periosteum and the bone, which is often, hereby, rendered carious. It is to this last, or malignant whitlow, that the term *felon* is most correctly applied.

Felon, what.

Found occasionally in other parts.

Similar inflammations are occasionally to be found in the soles of the feet, and palms of the hands; they break through the skin or cuticle with difficulty from their thickness; and hence become diffused, and, in the latter case, separate the cuticle from the skin beneath.

Acute pain, how produced.

In the whitlow, the acute and lancinating pain, complained of, arises partly from the thickness and inelasticity of the skin about the finger-nail, but more from the hardness of the finger-nail itself; both which act like a tight bandage upon the inflamed part, and do not allow it to swell or give way to the extravasation. In these cases, therefore, we can easily see why the application of poultices should be of more service than in any other; for they can here act mechanically; or, in other words, their moisture becomes imbibed by the cuticle, as by a sponge, so that it softens, grows larger in its dimensions, and less rigid in its texture: while the nail itself loses a part of its hardness, and becomes suppler. It is in consequence of the peculiar firmness of the skin around the nail that the soft parts below are so often seen pushing out through a very small opening in the skin as soon as this has been effected, and appearing like a fungus; but so exquisitely irritable as to give a more impressive idea of soreness, than, perhaps, any other kind of ulceration whatever. All this proceeds from the surrounding belts of the cuticle not giving way to the increase of the parts underneath; whence they are squeezed out of this small opening like paint out of a bladder. It is a common practice to eat away this protruded part by escharotics, as if it were a diseased

Cataplasms peculiarly useful.

Soft parts below, why pushing through the opening.

Protruded part not to be removed by escharotics.

fungus; but this is to give additional pain without any benefit, for the pressure from below will not be hereby diminished. By continuing the poultice, the tumefaction will subside, and consequently the pressure cease.

Treatment.

In the first stage of the complaint, leeches should be applied, and if the inflammation be hereby diminished, it may sometimes be carried off by astringent lotions, or ardent spirits, which excite the surrounding absorbents to additional action.

Produced by most causes of inflammation.

Most of the causes of inflammation operate in the production of this peculiar affection.

By peculiar causes.

It is also occasioned by an incurvation of the nail*; possibly sometimes by a caries or morbid state of the subjacent bone in the tendinous and periosteous variety, as asserted by Siebold†; and Mr. John Pearson has shown, that it may occasionally result from a syphilitic diathesis, or any other depraved habit‡. It seems, moreover, in some cases, to be produced by the bite, or burrowing of the larvæ of one or more minute, and, to the naked eye, invisible insects, hatched on the leaves of various field plants, and especially fescue-grass: and is said to be also occasioned by the bite of the gordius *aquaticus*, or hair-worm.

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* Vicat. Delect. Observ. Pract.

† Chirurgisches. Taschebuch. xi.

‡ Principles of Surgery, P. i.

# GENUS VI.

## ERYTHEMA.

### *INFLAMMATORY BLUSH.*

RED, GLABROUS, TUMID FULNESS OF THE INTEGUMENTS; DISAPPEARING ON PRESSURE: PAIN BURNING; INFLAMMATION ULCERATIVE; TERMINATING IN CUTICULAR SCALES, OR VESICLES; OCCASIONALLY IN GANGRENES.

GEN. VI. Why deserving of close attention.

THIS genus of inflammation is entitled to a minute and discriminative attention, not only on account of its violence and tendency to an almost unlimited spread, but from its having been very generally confounded with an exanthem* or eruptive fever which, in one or two of its species, it frequently accompanies, but of which it is then a mere symptom.

[One of the latest writers on erysipelas (or the erythema of the present author) considers it as merely a particular modification of cutaneous, or cutaneous and cellular inflammation. If (says he) we were to class these according to their natural affinities, we should place erysipelas between the exanthemata and phlegmon. It is less diffused than the former;—not so circumscribed as the latter. The exanthemata are confined to the skin; erysipelas affects both skin and cellular structure; while phlegmon has its original seat in the latter, the skin being secondarily involved. Phleg-

* The doctrine of erysipelas being an exanthem, according to Dr. Cullen's definition of the last term, is rather inconsistent. It is correctly observed by Mr. Lawrence, that, although the leading characters of the exanthemata are thus expressed "morbi contagiosi, semel tantum in decursu vitæ aliquem afficientes," Cullen has arranged under this order erysipelas, which attacks the same individual repeatedly, and the contagious nature of which is, to say the least, very doubtful. See Med. Chir. Trans. vol. xiv. p. 31. As, however, Dr. Good's definition of exanthemata is "cutaneous eruptions essentially accompanied with fever," he does not fall into the same kind of contradiction as Cullen did.

mon is a more violent inflammation than erysipelas; but sloughing of the cellular membrane is more frequent in the latter than the former*.] GEN. VI. Erythema.

Erythema, from ἐρευθος, "rubor" is a term of Hippocrates, who uses it as nearly as may be in the sense now offered; and for which many modern writers of our own country have not unaptly employed the vernacular term INFLAMMATORY BLUSH; since the redness has often very much the appearance of a blush, or glowing suffusion of the cutaneous capillaries. For ERYTHEMA, Celsus and Galen have unfortunately adopted the term *erysipelas*, whence Duretus, in his Latin version of Hippocrates, has used *suffusio erysipelatosa*. And hence erysipelas has been made a very common synonym of erythema by general writers, while the nosologists, with a few exceptions, have limited erysipelas to that species of exanthem or eruptive fever which is vernacularly known by the name of St. Anthony's Fire; and have revived erythema to express the local affection, or peculiar inflammation before us, in which the pyrexy is mostly symptomatic.

Generic term employed by Hippocrates; for which erysipelas has been used by Celsus and Galen; though since applied to an eruptive fever by many nosologists: who have restored erythema to its original import: whence the two disorders have been confounded.

Frequently, however, as these two disorders have been confounded, from an indiscriminate application of the same name to both, it will not be difficult to draw a distinctive line between them. Erythema bears the same analogy to phlegmon, as erysipelas does to small-pox. Phlegmon is local inflammation tending to suppuration; erythema, local inflammation tending to vesication: small-pox is an idiopathic fever producing a phlegmonous efflorescence. Small-pox is always contagious; erysipelas occasionally so; phlegmon and erythema have no such tendency.

Distinctive characters.

The distinction then between erysipelas and erythema is clear; yet the confusion, just noticed, has been increased by some writers who have not only used erysipelas in its popular, yet erroneous, signification of erythema, but have also employed erythema in a new and unjustifiable sense; as occurs particularly in Dr. Willan's classification of Cutaneous Diseases: where, while erysipelas is made to embrace both erysipelas and erythema, as these terms have hitherto been commonly used, erythema is arbitrarily ap-

Erythema sometimes used in a second sense,

* See Lawrence on Erysipelas in Med. Chir. Trans. vol. xiv. p. 18.

GEN. VI. Erythema. equally loose and indeterminable.

propriated as the name of another collection of cutaneous erubescences of very different characters, and produced by very different causes; some of them primary, others symptomatic affections; some constitutional, and others local; occasionally smooth, papulous, tubercular, or nodose; most of which should be distributed under different divisions.

Thus introduced and explained, erythema, as a genus, will be found to comprise the seven following species, the first three of which are taken with little alteration from Mr. Hunter:

| | | |
|---|---|---|
| 1. | ERYTHEMA ŒDEMATOSUM. | EDEMATOUS ERYTHEMA. |
| 2. | ——— ERYSIPELATOSUM. | ERYSIPELATOUS ERYTHEMA. |
| 3. | ——— GANGRÆNOSUM. | GANGRENOUS ERYTHEMA. |
| 4. | ——— VESICULARUM. | VESICULAR ERYTHEMA. |
| 5. | ——— ANATOMICUM. | ERYTHEMA FROM DISSECTION. |
| 6. | ——— PERNIO. | CHILBLAIN. |
| 7. | ——— INTERTRIGO. | FRET. |

Proximate cause mostly a peculiar irritability general or local.

Most of these depend upon a peculiar irritability of the constitution, or of the part in which the inflammation or erythema appears; and the common, though, perhaps, not the sole cause of such irritability is debility or relaxation.

Distinctions of Galen.

Galen, who justly distinguishes between suppurative, or, as he calls it, phlegmonous inflammation, erythematic (with him erysipelatous), and edematous, ascribes the first, according to the old doctrine of temperaments, to a prevalence of the sanguineous diathesis; the second to that of the bilious; and the third to that of the phlegmatic or pituitous*. That there is generally a peculiar habit in the last two, and often, as we have already observed, in the first, is so clear as to be indisputable: but it is by no means equally clear, that such peculiarity of habit is dependent upon the immediate cause Galen has adverted to. The temperaments of the Greek physicians, excepting when in excess, are not inconsistent with the condition of health; and hence, therefore, in connexion with the temperament,

How far applicable to the present genus.

* De Tumoribus, Præternat. tom. iii. xx.

there is usually, in the last two inflammations, a habit of debility or relaxation. And where this exists, the very same stimulus that, in a perfectly healthy frame, would produce a common adhesive or suppurative inflammation, under this state of the system changes the character of the inflammatory action, and urges on the ulcerative process from the first. It usually commences with great violence, and is peculiarly apt to spread; the surrounding parts being easily excited to act or sympathize in an action to which they are prone. Hence, continued sympathy is a common though not an universal effect; for we sometimes meet with very considerable inflammations confined to the part irritated, notwithstanding that the irritated part evinces great violence of action. Mr. Hunter has illustrated this difference of effect by referring to a piece of paper under two different states, dry and damp. In dry paper a blot of ink applied to it will not spread, and remains confined to the point of incidence; in wet paper it spreads easily, being attracted by the surrounding moisture to which it has an affinity.

GEN. VI. Erythema.

Erythematic inflammation why ulcerative rather than phlegmonous.

Continued sympathy a common effect, and why.

Illustrated.

[In this place the editor cannot refrain from expressing his obligations to the learned author for the very useful distinction proposed between erythema and erysipelas, the latter term being restricted to a fever that is followed by the peculiar inflammation of the skin, commonly termed erysipelatous. By erythema, he signifies merely the local affection of the skin, whether the consequence of fever, or not. The only objection to so true a distinction is its interference with the common meaning of the word erysipelas, now more loosely employed in every medical publication, and at every medical school. Yet, who will maintain, that a fever, leading to a peculiar inflammation of the skin, ought to be confounded with other cases, in which either no fever may precede the local affection, or a fever of a very different kind from what precedes the efflorescence of erysipelas in Dr. Good's sense of the expression. The truth of the latter part of this remark will be illustrated in the history of erythema anatomicum. Why the author, in his definition of erythema should have introduced the words "inflammation ulcerative," the editor can hardly understand; since erythema, or erysipelatous inflammation frequently terminates without any ulceration,

GEN. VI. Erythema.

suppuration, or even vesications. The connexion, which the disorder is represented by the author to have with debility as a cause, is another doctrine, that does not meet with universal assent. The truth is, that the peculiar state of the constitution, or part, determining the kind of inflammation is not known; but, as erythematous inflammation frequently occurs in young and robust persons, as well as the old and debilitated, nothing can be more certain, than that it is not essentially connected with weakness. Mr. Lawrence is quite at a loss to discover in this affection those marks of debility, which some have so much insisted on. Erysipelas, like any other inflammation, he observes, may occur in old and feeble persons, and the effects of the disease, when aggravated by injudicious treatment, or protracted from any cause, will soon weaken the most robust; but, however weak the patient, the local disturbance is one of excitement; there is increased activity in the circulation of the part, clearly marked by all the symptoms. Indeed, speaking of the part, he is unable to recognize debility as the cause of any inflammation whatever, and, in reference to the seat of disease, he regards the expressions of passive and asthenic inflammation and venous congestion, as either unmeaning, or calculated to convey erroneous notions.*]

## SPECIES I.

## ERYTHEMA ŒDEMATOSUM.

### *EDEMATOUS ERYTHEMA.*

COLOUR SCARLET; SPREADING WIDELY AND DEEPLY THROUGH THE CELLULAR MEMBRANE, WHICH OFTEN IMPERFECTLY SUPPURATES, SLOUGHS, AND BECOMES GANGRENOUS.

GEN. VI. SPEC. I.

THIS is the "edematous inflammation" of Mr. Hunter, who observes that, when the extravasated fluid is water, it

* See Med. Chir. Trans. vol. xiv. p. 28.

has very much the appearance of the adhesive inflammation, and probably resembles it more nearly than any other erythema, being of a scarlet colour, but much more diffused.

General character.

The skin, through the whole range of the intumescence, appears glabrous, and the redness vanishes upon a pressure of the finger, but returns as soon as the pressure is removed. The extravasated fluid is principally serum, and hence the swelling spreads wider, than the inflammation itself. It is very painful, or, rather, very sore; but has less of the sensation of throbbing, than the adhesive inflammation.

Probably goes deeper than the surface.

It is apparently limited to the surface, yet it probably goes much deeper; for the extravasated fluid is in too large a quantity to be furnished by the cells of the cutis alone: but as the swelling and the inflammation do not here keep pace with each other, as in the adhesive description, we have not the same guide to direct our judgment. Coincidently with the remarks already offered, Mr. Hunter observes that "the difference between this and the adhesive inflammation arises, I conceive, from the principle of inflammation acting upon a dropsical disposition, which is always attended with weakness; whereas a greater degree of strength would have produced the adhesive inflammation under the same cause or irritation. And what makes me conceive this, is, that, in many cases of anasarcous legs, we have exactly this inflammation come on from distention, which adds to the extravasation of the serum, as well as in most cases of scarifications of œdematous parts to evacuate the water. When this inflammation takes place it is much more lasting than the adhesive; and, I believe, seldom or never produces suppuration: but if it should run into this stage, it is more general, and the whole cellular membrane in the interstices of parts is apt to mortify and slough, producing very extensive abscesses, which are not circumscribed *."

Habit often dropsical.

Inflammation more lasting than the adhesive.

Sometimes suppurates, spreads widely, and becomes gangrenous.

Why œdematous inflammation rarely suppurates.

There is no difficulty in determining why œdematous inflammation should rarely, if ever, produce suppuration, and why it should be of longer continuance. Suppurative inflammation is, generally speaking, the process of a healthy part or habit taking place instinctively for the purpose of removing something that is dead, irritating, or otherwise

* On Blood, Part II. Ch. II. Sect. vii. p. 269.

GEN. VI. SPEC. I. Erythema œdematosum.

mischievous, and of filling up the space hereby produced with sound living matter. In œdematous inflammation, the part or habit is unhealthy and debilitated; and hence, while there is necessarily less tendency to suppuration, there is less power of recovery.

Sometimes migratory.

In some instances, the disorder is migratory, of which Dr. Swediaur gives a singular case that had just occurred in his practice. The patient was a robust, sanguineous man of fifty-five years of age, who had for many years laboured under paroxysms of gout, which had returned after certain intervals, but who, at the time, had been free from attack for a longer term than usual. The œdema first suddenly showed itself in the eyelids, and disappeared on the second day, when he complained of pain and swelling in the fauces, with difficult deglutition. This was removed by astringent gargles, when the eyelids became again œdematous; then the neck, and in a few days, in succession, the fingers of the right hand; the fingers itched, became exulcerated, discharged an acrid humour, and the patient felt well. Some months afterwards the same erythema returned, travelled in the same direction, and at last fixed on the feet, which in like manner inflamed, ulcerated, and healed with a speedy return of general salubrity*.

Curative intention.

The general curative intention therefore may be expressed in a few words. It should consist in whatever has a fair promise of giving local or constitutional tone, or both. Hence the benefit of astringent epithems and lotions, whether formed of earths, acids, or metallic oxydes, applied to the part affected; and of stimulants where the action is peculiarly weak, as camphor-water, or a solution of the acetate of ammonia, with proof spirit proportioned to the degree of torpor. And hence, as internal medicines, bark, columbo, myrrh, iron, will often be found highly serviceable, in conjunction with a generous diet, pure air, and such exercise as may be taken without fatigue.

[When erythema œdematosum is joined with a general tendency to dropsy, the treatment should be chiefly directed against the latter disease. But, when the local affection is called œdematous merely on account of the copious

* Nov. Nosol. Meth. Syst. vol. ii. 142.

effusion of serum in the part, and is not combined with a dropsical state of the constitution, some practitioners adopt antiphlogistic treatment, instead of the tonic stimulating plan. Thus, in the beginning of the case, venesection, the free use of leeches, low diet, &c. constitute the practice followed by many surgeons and physicians at Paris for the relief of œdematous erythema.*] GEN. VI. SPEC. I. Erythema œdematosum.

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## SPECIES II.

## ERYTHEMA ERYSIPELATOSUM.

### *ERYSIPELATOUS ERYTHEMA.*

COLOUR DEEPISH-RED; SUPERFICIAL; WITH A DETERMINED EDGE IN A SERPENTINE DIRECTION; THE PART WHICH HAS PASSED THROUGH THE ACTION HEALING AS THE PART NEXT ATTACKED BECOMES AFFECTED.

THIS is the "erysipelatous inflammation" of Mr. Hunter; and is evidently that which symptomatically accompanies the erysipelas as an exanthem, or eruptive fever. It is more commonly cutaneous, than situated in the deeper-seated parts; although, in some constitutions, almost every inflammation, wherever it takes place, will run deep as well as wide. The skin, however, appears to be most susceptible of its action; for it will spread over a prodigious surface of skin, while it rarely affects even the cellular membrane underneath; and in this respect, especially, it differs from the preceding species. [This opinion, that erysipelatous inflammation rarely affects the cellular membrane, or goes more deeply than the skin, is now found to be incorrect. It is only in the slightest cases that the disorder is confined to the skin, and, in all others, an effusion soon takes GEN. VI. SPEC. II. Commonly cutaneous: but affects the cellular membrane.

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* Roche et Sanson, Nouveaux Elém. de Pathologie, Med. Chir. tom. i. p. 351. Rayer, Traité des Maladies de la Peau, tom. ii. p. 221 and 241; and Lawrence, in Med. Chir. Trans. vol. xiv. p. 49.

GEN. VI. SPEC. II. Erythema erysipelatosum.

place in the cellular texture, causing a soft swelling; and this may be considerable, with much tension and a shining surface, when a large part of the body, or an entire limb, is involved *.] The extravasation, however, is less, than either in the œdematous or even the adhesive inflammation. It appears to support itself by continued sympathy; for it commonly begins at a point, and spreads in a migratory direction, as the part first attacked recovers. This cannot, therefore, be merely constitutional; for, if it were, the parts already inflamed could not recover, while the morbid condition of the constitution disposes the surrounding parts to the same action; but it affords an idea that, when the parts affected have once gone through the action, they lose the morbid disposition and become healthy. This property is not peculiar to the inflammation before us; the ring-worm and many other cutaneous affections have the same tendency.

Supports itself by continued sympathy, the parts first attacked soon recovering: and losing the morbid predisposition by the action of the disease.

Other examples of the same.

Mr. Hunter observes, that this inflammation is more common in the summer than in the winter, especially in hospitals; and believes, that it takes place more frequently after wounds on the head than any where else. "I have often," says he, "seen it begin round a wound on the scalp, and extend over the whole head and face: the eyelids being very much swelled and the ears thickened; it has then advanced to the neck, shoulders, and body, creeping along both arms, and terminating at the fingers' ends: the part which attacks the body often descends to both thighs, passes down the legs, and terminates at the ends of the toes. And while this is going on, it is as expeditiously cured behind, and the skin peels off from the cured parts." Sometimes, however, it stops suddenly in its course, and assumes a milder character.

More frequent in summer than in winter: more common after wounds on the head than elsewhere: migrates over the whole body.

Sometimes stops abruptly.

If it reach the cellular membrane it suppurates; forming the erysipelas phlegmonodes of Galen.

If it proceed deeper than the skin into the cellular membrane, it often suppurates, and at times occasions mortification in the cells by which the air is let loose; and it is this state of the disease that forms the *erysipelas phlegmonodes* of Galen †, Van Swieten ‡, and many later writers, who have used erysipelas in the loose manner I have

* Lawrence, vol. cit. p. 3. † Mat. Med. Lib. xiv. cap. ii.
‡ Comment. tom. ii. § 723.

already pointed out, as synonymous with erythema. [In Mr. Lawrence's view of this subject, phlegmonous differs from simple erysipelas (erythema erysipelatosum) merely in the higher degree and deeper extent of the inflammation, which not only occupies the whole thickness of the skin and subjacent adipous and cellular tissue, but soon proceeds in the latter to suppuration and sloughing, the skin itself being often involved secondarily in the mortification *.] GEN. VI. SPEC. II. Erythema erysipelatosum.

The effect of this mixture of inflammations produces a strange feel, for it is neither that of fluctuation, nor of crepitation; and as there are no adhesions, the matter finds an easy passage into the common cellular membrane, increasing the same kind of suppuration wherever it goes; and as mortification, and consequently putrefaction, follow speedily, the discharge becomes very offensive. As the parts loaded with effusion seldom ulcerate, they should be opened early; for the fluid either gets into the cellular membrane from the want of adhesions, or separates parts that are only attached, as the periosteum from the bone, or muscles from muscles; while the true suppurative inflammation, on the contrary, ulcerates briskly, and hence should be allowed to burst or at least should not be opened early. Gives a peculiar sensation to the touch. Effusion should be soon evacuated.

At the commencement of this inflammation, there is commonly some degree of fever, accompanied with prostration of strength and dejection of spirits, and especially with loss of appetite. But the fever soon subsides, while the inflammation pursues its course; yet since one source of irritation has thus departed, it is less violent, and sometimes assumes a chronic character. Some degree of fever at first; which soon subsides, while the inflammation continues.

As this, like the last, is a disease of weakness, the same general tonic plan will be calculated to oppose it; and where there is a tendency in the separated skin to crack, absorbent earths or powders should be scattered freely over the ulcerative or oozing parts, to imbibe the acrid fluid as it escapes, or the ulceration will soon become extensive; and the feeble and inflamed subjacent skin, hereby exposed to the stimulus of external agency, will grow gangrenous with great speed. Finely pounded starch is a useful powder for this purpose; as it combines a tonic and Treatment. Tonics. Absorbent earths applied locally. Starch.

* Med. Chir. Trans. vol. xiv. p. 9.

GEN. VI. SPEC. II. Erythema erysipelatosum.

an astringent with an absorbent power; so, likewise, is a mixture of equal parts of starch and finely levigated calamine or rhubarb. The last I have sometimes thought peculiarly effectual in checking the irritation; as the second appears to be in preventing the further spread of the inflamed outline that surrounds the separated cuticle.

Calamine. Rhubarb.

Sometimes attacks infants;

This species of inflammation sometimes attacks infants from a very early period after birth; and, what is more singular, they have in a few instances been born with it. In such cases, it appears to be produced by some occasional cause, co-operating with an erythematic diathesis derived hereditarily. It generally assumes the mixt form of phlegmonous erythema, suppurates imperfectly as it takes its course through the cellular membrane, and is often succeeded by gangrene. Its progress is very rapid from the relaxed state of the infantile fibre; and from the extrication of air, as soon as gangrene is produced, the tumefied surface has the mixt feel already noticed of fluctuation and crepitation. It commences usually about the genitals, works its way below towards the thighs and legs, and above towards the abdomen, and often excites on the peritonæum the same caseous or purulent secretion which is so apt to form on this membrane in puerperal fever. As there is no disposition to adhesion, the fluid spreads in every direction, wherever the ulceration makes a way for it; and hence it has often descended in great abundance into the tunica vaginalis and labia pudendi.

chiefly in a mixt form,

proceeding with great rapidity, and spreading to the abdominal viscera.

Purulent secretion very copious.

Treatment. With stimulants and tonics.

Stimulant epithems of ether, alcohol, and camphorated spirits, applied in the first stage of the disease to the parts affected, have been found the most beneficial practice: they act as counter-irritants, and take off the morbid excitement by the production of an artificial and more manageable inflammation. To these ought by all means to be added the use of the bark in any way in which it can be introduced, especially in that of injections, repeated several times a day.

State requiring antiphlogistic means.

[Mr. Lawrence rejects the notion that the cause of erysipelas is debility, and adverts to various facts to prove, that it is a complaint of an inflammatory character. Hence, the antiphlogistic treatment is what he particularly recommends. "In contending, however, for the inflammatory nature of erysipelas, and for the propriety of

treating it antiphlogistically," he says, "I do not mean to recommend, that measures equally active, and, in particular, that bleeding, whether general or local, are to be employed in all cases. In young persons, in the robust, and those of full habit, in instances where the pulse is full and strong, or when there is head-ache and white tongue, in erysipelas of the head, attended with symptoms denoting affection of the sensorium, and more especially in the very beginning of the affection, venesection will be proper; and it may be necessary to bleed largely, to repeat the evacuation, or to follow venesection by local abstraction of blood. Under such circumstances, the other parts of the antiphlogistic plan must also be employed; that is, the alimentary canal should be cleared by an active purgative, which may be followed by salines and antimonials, with the occasional use of milder aperients; and low diet should be enjoined. Nothing can be more different from such a case, than that of an elderly person, with a small and feeble pulse, in the advanced stage of the disease. The interval between these extremes is filled by numerous gradations, requiring corresponding modifications of treatment. The antiphlogistic plan itself embraces a wide range in point of degree; from blood-letting, local and general, with purging, vomiting, the free use of mercury and antimony, and low diet, to the exhibition of a mild aperient, with some saline medicine. The treatment of erysipelas, like that of any other inflammation, must be modified according to the age, constitution, previous health, and habits of the patient, and the period of the complaint. In asserting generally, that the antiphlogistic treatment is proper, I speak of the beginning of the disease, when the original and proper character of the affection is apparent; and I am decidedly of opinion, that, in some shape or degree, such treatment will always be beneficial in that stage. In many instances, active antiphlogistic measures are of the greatest service in lessening the severity both of the local and general symptoms. In others, the administration of calomel with aperients, and of diaphoretics with low diet, will be sufficient. When the affection occurs in old and debilitated subjects, the powers of life are soon seriously impaired, and our efforts must be directed, rather towards supporting them, than combating the local affection. I

Treatment to vary in different cases.

GEN. VI. SPEC. II. Erythema erysipelatosum.

have often seen such patients, labouring under erysipelas of the face in its advanced stage, with rapid and feeble pulse, dry and brown tongue, recovered, under circumstances apparently desperate, by the free use of bark and wine*." Nothing indeed can be more absurd, than to prescribe one plan, either antiphlogistic, or stimulating and tonic, for every case, without any regard to the variation of circumstances.]

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## SPECIES III.

## ERYTHEMA GANGRÆNOSUM.

### *GANGRENOUS ERYTHEMA.*

THE COLOUR DUSKY RED; SUPERFICIAL; CUTICLE SEPARATED FROM THE CUTIS BY A BLOODY SERUM; THE CUTIS, WHEN DENUDED, EXHIBITING DARK BROWN SPOTS, DISPOSED TO BLISTER, AND SLOUGH; OCCURRING CHIEFLY IN THE EXTREMITIES.

GEN. VI. SPEC. III.

Where chiefly to be found.

THE gangrenous erythema, like the two preceding species, is a frequent companion of debilitated or relaxed constitutions, but is mostly to be met with in advanced age, or weakly adolescence, or infancy; and particularly where, in old age, the constitution has been broken down by habits of intemperance and excess; the circulation is languid, and the blood even in the arteries assumes a venous appearance. The inflammatory stage is in these cases sometimes very slight, and the gangrene is ushered in with very little previous affection.

Anteceded by little previous inflammation.

A result of the preceding species in vitiated air.

Either of the preceding species will pass readily into the present, in a warm, stagnant, and corrupt air; for the same reason that all hospital wounds run rapidly into the same state under the same circumstances.

Local applications are here of far less importance than

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* See Med. Chir. Trans. vol. xiv. p. 41.

an attention to the general condition of the constitution. Stimulants and perfect cleanliness are perhaps all that are demanded under the first head; while, under the second, pure air, and a steady course of tonic medicines and diet, adapted to the age and habits of the patient, are absolutely indispensable, and can alone furnish any hope of recovery. GEN. VI. SPEC. III. Erythema gangræno-sum. Curative intention.

How far this disease appertains to the ignis sacer of the Roman writers, will be seen under the ensuing species, which forms another subdivision of the same affection.

[Gangrenous erythema, or erysipelas, seems to the editor not to merit the rank of a distinct species, because it is an effect of several forms of erythema or erysipelas when they are violent, and it is not the exclusive character of any particular example of the disorder. Bad cases of phlegmonous erysipelas present us with the most severe specimens of gangrenous mischief resulting from the disease; the hope of preventing which mischief has induced Messrs. Hutchison, Lawrence, and others, to have prompt recourse to numerous or extensive incisions in the part affected.]

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## SPECIES IV.

## ERYTHEMA VESICULARE.

### *VESICULAR ERYTHEMA.*

COLOUR PALE-RED; SURFACE ROUGHISH, AND COVERED WITH CROWDING MINUTE VESICLES, FILLED WITH AN ACRID, OFTEN WITH A REDDISH FLUID; PROGRESSIVELY TRAILING INTO THE NEIGHBOURING SOUND PARTS.

THIS species admits of two varieties, which have been pointed out from the age of Celsus: GEN. VI. SPEC. IV.

- α Benignum. Benign vesicular erythema.
- β Corrosivum. Erosive vesicular erythema.

In the FIRST, the redness and vesicles advance without α E. vesiculare benignum.

GEN. VI. SPEC. IV. Erythema vesiculare.

a breach of the cuticle, as the part that has passed through the action is healing.

β E. vesiculare corrosivum.

In the SECOND, the vesicles break in the part first affected, and the erosive fluid produces tracts of sanious ulceration as the redness advances.

General remarks.

Under the present and the preceding species is included the IGNIS SACER of the ancients; about which much has been written, but which has been seldom understood, and never hitherto allotted a clear methodic position. The author has taken some pains upon the subject, and trusts he will be able to establish the true boundary and character of a disease, not more frequently described by the physicians, than celebrated by the poets of antiquity.

Ignis sacer synonymous with this and the preceding species.

Common erroneous view of ignis sacer;

The common error has consisted in making the ignis sacer, or holy fire, an exanthem or eruptive fever; an erysipelas or a pestis: or some other idiopathic fever of the same order. There is no doubt, indeed, that, like the erysipelatous erythema, it has at times been met with as an accompanying symptom in pestis; and when we shall come to treat of this disease, a distinct notice will be taken of the variety which such an accompaniment produces, and of which the plague of Athens seems to furnish us with a tolerable example; but the ignis sacer, in its genuine and simple state, instead of being marked with a low eruptive fever, has often very little fever of any kind; certainly nothing more than symptomatic fever; and by Celsus is described as being best cured by an ephemeral or any other fever which may give increased action to the system; hereby proving that this, like the entire group of erythemas, is a result of debility.

usually accompanied with but little pyrexy.

A result of debility.

Import of sacer in medicine.

In ancient times some diseases were supposed to be inflicted on mankind by the special interposition of the Divinity, or of his ministers; and to these was assigned the name of sacer, or holy; though the peculiar crimes for which they were inflicted, or the names of the particular persons who in this manner first drew down the special vengeance of Heaven upon their atrocities, have not been communicated to us. The later term of Saint or Sanctus, as in St. Anthony's fire or St. Vitus's dance, are of parallel origin, and express corporeal punishments first inflicted by the agents or supposed agents of the Deity, whose names they respectively bear. Ignis is a term expressive of the

Sanctus, or Saint.

heat, redness, acrimony, and erosive power of a disease; and is hence applied to the present, in common with many other affections.

GEN. VI. SPEC. IV. Erythema vesiculare.

The best description of the IGNIS SACER that has descended to us from the Roman writers, is that of Celsus. He represents it as a genus comprising two species, the first of which is precisely parallel with the species before us, and the second with the *erythema gangrænosum*, or the preceding; and, in order to prevent any doubt upon this subject, the definitions of both species are here given, as nearly as may be, in the words of Celsus himself. "It has," says he, "two species; one (the vesicular erythema of the present system) is reddish, or a mixture of redness and paleness, rough with approximating vesicles *(pustulæ)*, none of which are larger than the rest, and which for the most part are very small. In these are almost always found a fluid *(pus)*, and often a red colour with heat*." Then follows his description of the two varieties just given, the benign and erosive, in the following words: "sometimes it trails along, the part healing that was first diseased;" corresponding with the variety α of the present system. And "sometimes the part ulcerating; in consequence of which the vesicles (pustulæ) break, the ulceration keeps spreading, and the fluid escapes:" alike corresponding with the variety β. Celsus then passes on to describe his second species, which answers to the character and almost to the words of *erythema gangrænosum*, or that we have just considered. "The other species," says he, "consists in an ulceration of the cuticle, without depth, broad, sublivid, but unequally so; and the middle heals, while the boundary lines advance; yet not unfrequently the part that seemed healed again becomes exulcerated; while the neighbouring parts, which are about to receive the disease, grow tumid and hard, and change from a blackish hue; the disease chiefly attacking the legs."

Description from Celsus.

His first species synonymous with erythema vesiculare.

His two varieties of this species.

His second species synonymous with erythema gangrænosum.

In this passage the words fluid and vesicles are by Celsus named pus and pustulæ; but that he hereby meant

Import of pustulæ in Celsus, synonymous with φλύκταινα of the Greeks.

* De Medicinâ, lib. v. cap. xxviii. sect. iv.

GEN. VI. SPEC. IV. Erythema vesiculare.

vesicles, and an ichorous fluid, the φλύκταιναι of the Greeks, is clear; first, because Celsus thus explains the term in another section of the same chapter; and secondly, because in the ignis sacer, which, as we learn from Thucydides and Lucretius, was a symptom in the plague of Athens, the former has given us φλύκταιναι, or vesicles, as the peculiar character of the eruption. "Yet the body," says Thucydides, "was not outwardly very hot to the touch, nor pale; but reddish, livid, and efflorescing with minute phlyctænæ (vesicles) and ulcers*;" which Lucretius has thus forcibly rendered:

> Et simul ulceribus quasi inustis, omne rubore
> Corpus, ut est, per membra SACER quom diditur IGNIS.
>
> Wide-ting'd with purple dye, and brandish'd o'er
> With trails of caustic ulcers, like the blaze
> Strew'd by the HOLY FIRE.

Hence ignis sacer an erythema.

It is perfectly clear, then, I think, that the IGNIS SACER of the Roman writers, was an erythema, chiefly vesicular, and sometimes gangrenous. It is also perfectly clear, that

Medical treatment.

the present, like the preceding, species of erythema is the result of local or general debility, and requires warm and active local applications, and a tonic and bracing regimen. By later writers, however, the term is sometimes more generalized, and, like pestilence, is employed to denote other affections, than the genuine ignis sacer, though making an approach to them.

Where the skin is slightly broken, and the acrid fluid oozes through the minute openings, the vesications should be frequently dusted, as already recommended under the second species, with chalk or starch; or, where the latter is too harsh and drying, with a mixture of equal parts of starch and finely levigated calamine; carefully abstaining from all oleaginous or other applications that have a tendency to augment the relaxed state of the fibres.

Found as a symptom or sequel in other complaints.

I have observed, that the vesicular erythema is found, at times, as a symptom in plague; it is also occasionally found in the one or other of its varieties, as a sequel on the exhibition of mercury in irritable habits; and, under

* Hist. ii. 50.

this form, has been occasionally denominated by authors *erythema mercuriale*, and *hydrargyria*, as we shall have occasion to notice still further, when treating of syphilis. GEN. VI. SPEC. IV. Erythema vesiculare.

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## SPECIES V.

## ERYTHEMA ANATOMICUM.

### *ERYTHEMA FROM DISSECTION.*

INFLAMMATION WITH LANCINATING PAINS ABOUT THE AXILLA, SHOOTING DOWN THE CHEST, USHERED BY SEVERE RIGORS AND ANXIETY; SUCCEEDING RAPIDLY TO THE DISSECTION OF A FRESH CORPSE, WITH A PUNCTURE OR ABRASION ON THE HAND OF THE ANATOMIST; BLUSH A DEEP CRIMSON, WITH A SPONGY FULNESS, CHIEFLY OVER THE PECTORAL MUSCLE: FEVER A TYPHUS.

GEN. VI. SPEC. V. Diffusive cellular inflammation

IN our opening remarks on the present order of INFLAMMATIONS, we adverted to that diffuse and ulcerative kind which is often found to take place in the cellular membrane, though rarely limited to this texture, from a variety of apparently slight causes, under a peculiar condition of the organ locally affected, or of the idiosyncrasy, or of the habit or manner of life. These causes are very numerous, and in themselves of very different character, notwithstanding the similarity of effect which they often superinduce. Some of them are of a mechanical, others of an animal origin; some are general, others specific irritants; but in every instance the cause, when first glanced at, is so seemingly minute, that nothing but an established experience of the fact, from a redundancy of repetitions, could induce us to predicate so serious and often fatal a result. Among the more common of these causes are venesection; the exposure of a pricked or pimpled finger to the fluids of a recently dead subject; the bite of a venomous serpent; the application of various secreted

common from numerous causes.

GEN. VI. SPEC. V. Erythema anatomicum.

irritant or chemical acrids to an abraded part of the cuticle; and a small, superficial, but jagged wound, made by a flesh-hook, or other mechanical instrument.

But usually some constitutional affection coincides with them.

Now all these causes, with the exception of the bite of a venomous serpent, or other animal, are perpetually taking place without any mischievous effect whatever. And hence it is obvious, that, unless there be some kind of aberration from the common law or powers of health in the part affected, or in the general frame of the individuals that occasionally suffer from the application of such causes, and thus evince an exception to the ordinary course of nature, there could be no mischievous effect at any time. Of the peculiarity of this aberration, or morbid susceptibility of impression, we know little or nothing. Intoxication seems to have been a predisponent in a few instances; but, as this has not uniformly acted, there must even at the time be a something independent of such an excitement, how much soever it may serve as an auxiliary.

The symptoms from such causes, though often similar, in some of them differ essentially: particularly where dissection is a cause; as also in the bite of the more venomous serpents.

Although the symptoms issuing from such causes brought into a state of activity evince both in their local and constitutional march a striking degree of resemblance, as well as of uniformity in their descent from case to case; yet they are often not without a considerable degree of anomaly and discrepancy of character, with the exception of those, which proceed from the apparent contagion of a recently dead body during dissection, or from the bite of the more venomous serpents.

The former peculiarly entitled to attention.

The former affection is peculiarly entitled to our attention from the undeviating tenor of its progress, the frequency of its occurrence, and the wonted fatality of its termination; and an inquiry into its nature may possibly lead us to a somewhat better comprehension of the character of diffuse cellular inflammation from the venom of the more poisonous serpents. The writer has hence given it, for the first time, a distinct, and, as he believes, a deserved place in nosology, and trusts that the name he has assigned to it will meet with the approbation of the profession.

Anatomic erythema long observed, but not much noticed till of late.

The effect itself has been long observed, and occasionally adverted to, sometimes indeed loosely described, though it has not till of late very minutely engaged the attention of pathologists. But the repeated cases that, within little

more than the last two years, have occurred in England*, Scotland, and Ireland, and have been separately reported by authorities of high reputation, have in the present day fixed the attention of the public upon the subject, and given an interest to it, that will no doubt lead to much clearer views than we are yet in possession of. The third volume alone of the Dublin Hospital Reports contains three cases of this kind, communicated by Dr. Colles†; and the first volume of the Transactions of the Medico-chirurgical Society of Edinburgh, not less than eleven communicated to, or drawn up from personal observation, by, Dr. Duncan, junior‡: in all of which the leading characters are the same; and particularly in the diffuse blush and spongy feel in the integuments of the side, and the typhous career of the accompanying fever: the chief discrepancy being in the degree of pain or inflammatory action in the vicinity of the pricked or abraded part which formed the inlet to the disease.

Gen. VI. Spec. V. Erythema anatomicum. Its frequency within a few years. General characters: occasional discrepancy.

But while the fact is thus generally admitted, the immediate cause has been very differently explained: some writers having ascribed the inflammation to simple irritation in a constitution or idiosyncrasy of peculiar excitement; others to the irritation of a putrescent fluid; and others again to a specific virus.

The cause differently accounted for. Hypothesis of simple irritation: of putrefaction: of a specific virus.

The weakest and most inadequate of all these hypotheses is the second, or that which supposes the inflammation to proceed from an absorption of some part of the fluids of the body in a state of PUTREFACTION. Yet it is the hypothesis still adopted by many pathologists of established name, and especially by M. Magendie, if we may judge from his account of the fate of Professor Lœler, who died, as he tells us, "in consequence of the absorption of putrid miasms, which took place by a slight abrasion on one of the fingers of the right hand§." It is an insuperable ob-

The second the weakest and least adequate: though still adopted by Magendie and other high authorities.

* Case of Dr. Pett, communicated by B. Travers, Esq.—Case of Mr. Newby, by Dr. Nelson, Medical and Phys. Journ. Feb. 1823. Id. Aug. 1823.—Case of Mr. Rainer, by Dr. Barlow. Edin. Medico-chir. Trans. vol. i. p. 563.

† Fatal Consequences resulting from slight wounds received in dissection, p. 201. Dubl. 8vo. 1822.

‡ Cases of Diffused Inflammation, &c. p. 492. 524, and 563. Edin. 8vo. 1824.

§ Précis Elémentaire de Physiologie, 2 tom. 8vo. Paris, 1817.

GEN. VI. SPEC. V. Erythema anatomicum.

Insuperable objection to it.

jection to this tenet, that the disease has occurred in almost every instance upon the dissection of a fresh body, and very rarely after putrefaction has taken place: frequently indeed when the examination has been made within twenty-four hours, and in the case of Dr. Pett within twelve hours, after death. "All the cases," says Dr. Duncan, "which I have observed, or of which I have had accurate reports, except that of Mr. Whitlaw, and No. XVII, occurred after the examination of recent bodies, before they were interred *." It is highly probable indeed, that the process of putrefaction destroys the specific virus, and consequently takes off its effects; and such is the expressed opinion of Dr. Colles†: and that, in the few cases in which local or constitution symptoms have followed after the dissection of a putrid body, it has rather been from the action of the putrid matter as a simple acuant on an irritable constitution, than from any specific influence. Dr. Duncan's two cases of affection when the body was putrescent afford a striking confirmation of this opinion, instead of opposing it; for the first patient is described as being of a nervous irritable temperament, and the second, as being of scrophulous habit.

Putrefaction probably destroys the specific virus.

Hypothesis of simple irritants examined.

Under such and similar circumstances, even mechanical and chemical irritants, and diseased secretions of various kinds, though otherwise sufficiently innocuous, are often found to excite not only local but diffuse inflammation, and a sympathetic fever that has sometimes proved dangerous and even fatal; the symptoms, indeed, being often a pretty close copy of those characterizing the disease before us. And hence many pathologists of the present day, chiefly from the difficulty of detecting a specific virus, have ascribed all the cases of anatomical erythema to the same cause of SIMPLE IRRITATION in a frame thus constituted.

Objected to from the cause of the symptoms compared with those of erythema anatomicum.

But, in the first place, the disease before us has an essential difference from all the other sources of inflammation in the manner of its onset, and in the state of the affected part. While all the rest OPEN WITH LOCAL INFLAMMATION, originating at the point of injury; the inflammation spreading thence visibly towards the shoulder

* Trans. Medico-chir. Soc. Edin. vol. i. p. 565.

† Dublin Hospital Reports, vol. iii. ut suprà.

or axilla, and followed by fever and constitutional disturbance as the result of the local mischief; the anatomic erythema COMMENCES WITH FEVER AND CONSTITUTIONAL DISTURBANCE, while the inflammation first shows itself about the shoulder or axilla; the local point of injury remaining little if at all affected by inflammatory action. There is often, indeed, a severe and lancinating pain, which darts upwards from such point; but, except in a particular description of cases, which we shall notice presently, there is no inflammation worth noticing, even when the pain is altogether intolerable. GEN. VI. SPEC. V. Erythema anatomicum.

And, secondly, the plurality of individuals who have frequently been affected at the same time, as well as with precisely the same train of symptoms, and who have propagated the disease to their attendants, leads us, almost irresistibly, to the same conclusion of a specific source of impression as in other cases of propagable contagion. The same subject that gave rise to the complaint, which terminated fatally in Dr. Dease, originated it also, though not to a fatal extent, in Mr. Egan*. The cases of Mr. Blyth and Mr. Young, narrated by Dr. Duncan†, were in like manner derived from a common dissection, as were those of Mr. Hercey, Mr. Hennen, and Dr. Dumbreck, communicated from the same authority; in each of which, also, one of the anatomists fell a sacrifice, while the others were fortunate enough to recover. Specific virus obvious from the plurality of persons affected at the same time, or from each other.

The following, forming another proof, from the pen of Dr. Duncan, is perhaps still more to the point. "Dr. Cumming, a medical practitioner in this city, was present 30th September, 1821, at the dissection of a young woman who died from puerperal fever. Took no share in the dissection, except introducing a fresh thread into the needle which was employed in sewing the body, and was not aware of an abrasion, or having punctured himself in the act of threading. *About eight hours thereafter*, felt an uneasy sensation in the middle finger of the left hand, at the inner side of the flexure of the first joint; when, on examination, there was discovered an angry pimple. Passed a restless night; Additional illustration.

* Dublin Hospital Reports, vol. iii. ut suprà.

† Trans. Medico-Chir. Soc. Edin. vol. i. ut suprà.

GEN. VI. SPEC. V. Erythema anatomicum.

towards the morning had a severe rigor, to which supervened symptoms of pyrexia." The disease became established, and though its progress was less rapid and decisive than general, the patient expired on the eleventh day from the attack. The case, however, is here particularly selected, because it appears that a female who was employed to wash, in the evening after the above dissection, a towel that, in the course of it, had been used instead of a sponge, scratched her finger with a pin which was left in it, and received the same disorder, in a milder, indeed, though still a very alarming degree; but from which she ultimately recovered.

Other examples unnecessary.

It is unnecessary to accumulate examples. Whatever be the difficulty of conceiving the existence of a specific virus generated shortly after death, and before putrefaction takes place; it is far more difficult to withhold our assent from such an explanation, or to account for such effects upon any other principle.

Physiological illustration.

It may perhaps, in a slight degree, assist the pathologist in his future inquiries into this obscure subject to observe, that we have ground for believing, that a new and active compound of some kind or other is constantly forming antecedently to the process of putrefaction, at the moment the living power, as well in plants as in animals, is ceasing to exist, and a play of affinities commences, which this power has hitherto restrained. In plants this usually appears in the form of a saccharine principle, perhaps a saccharine acid; among mankind in that of a phosphoric acid, and often, from its combination with other elements, of a phosphorescent light. This is particularly the case with those animals, that have a peculiar power of emitting, and, perhaps, of secreting light while alive, as the glow-worm, the lantern-fly (fulgora), and the *cancer fulgens*, among insects; among shell-worms, the phola, *medusa phosphorea*, and various molluscæ; and amongst fishes, most that inhabit salt-water*. All these are found to pour forth a succession of light after their death, till putrefaction commences, but no longer. Yet something of the

Saccharine principle formed in plants as the life decays.

Phosphorescent light in animals recently dead only.

* Hulme, Experiments, &c. on the Light which is spontaneously emitted from various Bodies. Phil. Trans. 1800.

same kind seems also to take place in various other animals under certain circumstances;—perhaps in all. M. Cuvier tells us that M. Percy, who, during twenty-five years of war, had under his care more than a million of wounded, and had often been obliged to dress wounds in the dark, had frequently observed a phosphorescent light to issue from them, especially when extensive and dangerous, and where the living power was at a very low ebb. And he found, also, that the best way of rendering this emanation visible, is that of applying an aqueous fluid, as in the case of reviving the phosphorescent light of the recently dead animals we have just noticed. "In one instance," says he, "a vivid light, a true ignis fatuus, existed for more than six days over the wound of an officer who had been dressed with compresses, wetted with pure water only*."

GEN. VI. SPEC. V. Erythema anatomicum. Issuing from the surface of wounds.

I pretend by no means to say, that the new and active, but virulent and contagious material, formed, and perhaps always in the human, and apparently in other animal bodies, on the cessation of the living principle, and when the laws of chemistry hitherto held in subjection by the operation of this principle, now begin to assert their sway, is of either of the kinds I have thus adverted to; I have only endeavoured to draw the attention of the physiologist to the subject, by showing that some peculiar and extraordinary compounds of a very diffusive and active kind are assuredly formed on the immediate termination of life, and to urge him to a search after compounds that have not hitherto been explored.

This illustration how far applicable.

Be the contagious material, however, what it may, it appears to pervade equally all the fluids of the decomposing body, whether natural or morbid: for the disease has followed where the punctured hand has been merely immersed in genuine pus † that has flowed from an abscess of the stomach or some other viscus, as well as where it has merely come in contact with the lubricating lymph of serous or mucous membranes; and, as already observed, where it has only touched a towel or a sponge,

The virus pervades all the fluids of the dissected body. Exemplified.

* Analyse des Travaux de l'Academie des Sciences de Paris pour 1819.

† Case, Lond. &c. Phys. Journ. Aug. 1823, p. 123.

GEN. VI. SPEC. V. Erythema anatomicum.

employed in wiping up the fluids, or other materials that have required removal in the course of an examination, or even a thread wetted with the same and pressed through the eye of a needle.

Does not depend on the nature of the previous disease.

Nor does the character of the contagious material appear to depend in any degree upon the nature of the disease of which the subject submitted to dissection has died. It has followed cases of dropsy, of pulmonary affection, of enteritis, of puerperal fever, of aneurism, and of Cesarian section *. So that the nature of the preceding disease has as little connexion with the virus, as the process of putrefaction.

Exemplified.

Progress of the disease.

The ordinary progress of the complaint cannot be better described, than by copying the sufferings of Professor Dease. His demonstration took place on a recent subject, on February 13, 1819, at one o'clock. He awoke early the ensuing morning with severe rigors, sickness, and acute pain in the left shoulder. On the next day, a slight fulness was observed above the clavicle along the left side of the neck, which could not bear the slightest pressure. On the day succeeding, a colourless swelling was noticed about the axilla, which first suggested the real nature of the complaint: and on examining the hand there was found by Dr. Colles the mark of a slight scratch with a superincumbent vesicle. He appeared to improve a little for a day or two, though full, florid, and crimsoning erythema occupied the side in the region of the pectoral muscle, extending downwards. On the morning of the nineteenth, he showed delirium, and a vesicle appeared on his fore-arm, which remained stationary to the last. By the next day the erythematous swelling had extended over the entire side of the body from a little below the axilla to the hip; and the swollen part became studded pretty thickly with indurated papulæ; the delirium being more confirmed. On the twenty-first the inflammation completely involved the axilla, and, on its posterior edge, an abscess seemed to have formed, though there was no fluctuation. At this period, the opposite or right arm

* Duncan's Cases in Trans. Medico-Chir. Soc. Edin. ut suprà; as also p. 566.

exhibited an intumescence on its anterior part, occupying about a hand's-breadth of the flexor muscles, which was punctured on the same evening and discharged about a tea-spoonful of serous fluid, but without relief; and within an hour or two afterwards, being the eighth day from the accession of the disease, he expired.

GEN. VI. SPEC. V. Erythema anatomicum.

The pathognomonic blush that spreads over the region of the pectoral muscle has a peculiar feel, that is not easy to be described; it yields to pressure like a quagmire, or piece of sponge; and is hence called boggy by Mr. Lizars *, and doughy by Dr. Colles †. In the case of Dr. Pett it was found by Mr. Travers ‡ to crepitate, a secretion or extrication of air having apparently taken place. There is often a considerable degree of uneasiness in the punctured or abraded spot which has proved an inlet to the virus, sometimes, indeed, amounting to an agonizing and intolerable pain, though without any visible show of inflammation, or too slight to be regarded. The accession of the fever is usually accompanied with great anxiety and dejection of spirits, and often an unwonted irritability of temper. The nervous and depressing character of the fever is indeed obvious from the first, and the patient rarely rallies into any degree of hope or composure where it proceeds to a fatal termination.

Erythematic blush a pathognomic symptom.

Swollen parts sometimes crepitate.

Sometimes extreme pain in the punctured spot, but without inflammation.

Nature of the fever.

Fatal issue.

In very many cases, however, its issue is of a happier kind; and where this occurs, sometimes, about the eighth day, a gentle diaphoresis or diapnoë lubricates the harsh and burning skin, a sound and refreshing sleep succeeds, the pain and inflammation diminish, and the patient advances to recovery in a straight path. But, more generally, an effort is made to form lodgments of imperfect pus, bloody serum, or gangrenous ichor, often of all these combined, in particular parts of the affected side, most commonly indeed in the axilla; which swells into an enormous bag, and, if not opened by art, bursts spontaneously and discharges the complicated and pent-up fluid to an amount of several pints; the whole of the cellular membrane on the affected side being broken down into the

Sometimes more favourable.

Prognosis in such cases.

* Trans. Medico-Chir. Soc. Edin. vol. i. p. 496.

† Dublin Hosp. Reports, vol. iii. ut suprà.

‡ Lond. Med. and Phys. Journ. Feb. 1823, p. 176.

GEN. VI. SPEC. V. Erythema anatomicum.

general mass, with numerous sloughs, and skeins of fibres detached from the adjoining muscles and thrown out in loose bundles. The cure is long, and doubtful, in proportion to the range of the ulceration, and the extent of the gangrene: and the patient is often so much reduced as to be in danger of falling a sacrifice from hectic fever or some other secondary affection. But when he has reached this stage he generally succeeds in the end, though the skin over the injured part is considerably shrivelled from the loss of the cellular texture beneath, and often attached to the subjacent muscles.

Occasionally fatality from secondary effects.

A peculiar habit or idiosyncrasy necessary for the virus to take effect.

Such is the progress of the disease when the contagion meets with a habit or constitution favourable to its mischievous action, and which yields at once to its influence. But, as in other contagions, so, in the present, we perceive a striking diversity in this respect. The habit or idiosyncrasy of most anatomists fortunately renders them altogether unsusceptive of its impression, and they escape from its arrest. And hence, in all probability, the reason why but few comparatively are ever affected with this fearful complaint, though handling dead bodies for years, and with hands chapped or punctured in various points.

Such habits not common and hence very numerous escapes.

In some the habit or idiosyncrasy only partially protects.

There are others who seem to possess constitutionally a modified protection, though they cannot escape altogether; in whom the virus finds a less easy course of absorption, and, by being delayed in its progress towards the axilla, opens its assault at the point of contagion, becomes concentrated, and spreads its chief brunt in that quarter. In this case, the disease commences with local, instead of with constitutional symptoms, and the latter are even at last rather a sympathetic sequel, as in numerous cases of simple irritants, than a diacritical part of the disorder. The punctured hand or finger is not only vehemently painful, but swells and becomes considerably inflamed; the inflammation, characterized by heat, redness, pain, and enlargement, gradually shoots up the fore-arm; and if not checked in its progress ascends to the shoulder, and fixes itself in the axilla, or spreads still further into the side of the chest. But the virulence is usually diluted as it widens; and, though the constitution suffers much from symptomatic fever, the inflammatory action is often confined to the arm alone, where it seems to aim at forming

Progress of the disease in such cases.

Commences locally instead of constitutionally:

and is less virulent.

a chain of abscesses from the hand to the elbow, and sometimes to the shoulder or axilla.

GEN. VI. SPEC. V. Erythema anatomicum.

This distinction is so clearly marked and closely adhered to, that I have scarcely ever heard or read of a case that proved fatal, where the disease has opened with local inflammation, nor often where it has been accompanied with any great degree of danger: while, on the contrary, nothing can be more dangerous than the same disease, wheret he constitutional symptoms take the lead. And I gladly avail myself of a confirmation of this remark by my distinguished friend, Mr. Travers, published since the preceding edition of the present work, in which it occurs in the same words: "Inflammation is not necessary to the most virulent and fatal action of the poison; and, in general, I should be disposed to say of these cases, that the symptoms of local inflammation and constitutional irritation exist in an inverse ratio of severity*." In a few instances a most offensive smell has been found to accompany the diaphoresis which occasionally breaks forth over the body. In the case of Mr. Whitlaw, Dr. Duncan describes it as "a profuse dark-coloured clammy sweat, of a smell so exceedingly fetid and disagreeable that it could neither be borne by the patient himself, nor by his attendants. It was in such abundance as not only to wet his body-clothes, but also the bed-clothes, and stained them of a dark colour, so that they could with difficulty be washed white again. When the patient awoke out of this state of slumber, in which he had continued during the perspiration, he felt great relief of all the symptoms†." The diaphoresis was in fact critical; and, so far as I have seen, it never occurs but in those that recover; and usually, if not always, is an accompaniment of the disease where the local symptoms take the lead, and in a considerable degree concentrate the virus. It must not, therefore, be confounded with that cadaverous smell, which is sometimes emitted from the body a short time before death, and is a melancholy harbinger of that event.

This distinction clearly marked in practice.

Occasionally an offensive odour bursts forth from the body, accompanied with profuse sweat.

Generally critical and favourable.

The inflammation that most nearly resembles the ery- Erythema from bite of venomous serpents,

* Inquiry concerning Constitutional Irritation, &c. p. 203. 8vo. 1828.

† Trans. Medico-Chir. Soc. Edin. ut suprà, 505.

GEN. VI. SPEC. V. Erythema anatomicum.

thema before us, is that produced by the bite of the more venomous serpents, and especially of the rattle-snake; and as, in all these cases, a specific virus is universally admitted, analogy, in addition to the reasons already urged, leads us to a like cause in the present instance. The chief difference is in the greater degree of virulence or malignity that characterizes the serpent's fang, and the greater rapidity of its mischief. A bite from the fang of the cobra de capello or hooded snake, the *coluber naja* of Linnéus, generally destroys life in twenty-four hours, and from the fang of the rattle-snake (*crotalus horridus*, Lin.) in a shorter time, if no curative means be had recourse to. In both, the local and constitutional symptoms take place nearly simultaneously, and persevere in their double attack. The bitten limb swells instantaneously from the part affected, and the inflammation shoots with great speed up its entire length to the body; and, if it be the arm, associates the axilla in its malignant career; and, if life continue long enough, darts down the side over the pectoral muscle, and produces there the same kind of erythema as in the disease before us. The vital principle, however, is from the first exhausted suddenly, as though by a stroke of lightning; the blood ceases to flow in the smaller vessels of the swollen part; the superincumbent skin feels deadly cold, the action of the heart is so weak that the pulse is scarcely perceptible; the stomach so irritable that nothing can be retained on it; dejection and horror overpower the mind, and a low muttering delirium forms the closing scene.

and especially the rattle-snake, approaches the nature of the present; but is still more violent and rapid.

General description.

Sphacelus generally destroys, if the first symptoms are recovered from.

Very powerful stimulants applied instantly may postpone the catastrophe, and sometimes, even in the bite of the rattle-snake, produce a cure; but if the tide of life be kept moving till the venom has exhausted its malignity, the debility is usually so extreme, and the field of sphacelus so extensive, that the unhappy sufferer too often falls a victim to ths local mischief, when he has even triumphed over the constitutional assault.

Striking illustration.

A striking example of this occurred a few years ago in St. George's Hospital, in a patient whose progress the present writer watched with deep interest. He took notes on the occasion: but the account has been since given so

much more minutely by Sir Everard Home, that he will chiefly copy from his statement*. The patient, by name Thomas Soper, twenty-six years of age, attempted, Oct. 17, 1809, to raise a rattle-snake confined in a cage in a public show-room in Piccadilly, by irritating him with a foot-rule, but the snake continued quiet. The foot-rule was dropped into the cage, and the man had the rashness to introduce his hand to take it away. The serpent instantly seized upon it, and bit it in two places. The bites took place at half past two o'clock p.m.: and the wounded man instantly applied to a neighbouring chemist, who gave him a dose of jalap, as he considered him in a state of intoxication from the incoherency of his language, which was probably the effect of great terror. The hand almost immediately began to swell, and he applied for aid at St. George's Hospital by three o'clock, or within an hour after the attack. The swelling had by this time extended half way up his fore-arm: the skin on the back of the hand was very tense, and the bitten part acutely painful. At four o'clock the swelling had gained upon the elbow, and at half past four the pain had extended to the axilla, and the swelling within a short distance of it: the skin was cold, the pulse beat a hundred strokes in a minute, the man complained of sickness, but his answers were incoherent. Ammonia, camphor, and ether were freely administered internally; and the two former were also applied externally.

GEN. VI. SPEC. V. Erythema anatomicum.

The symptoms continued to augment, with the exception that the patient was collected at times, and expressed a hope of recovery; but for the most part his mind was greatly dejected, and it was often difficult to keep him from fainting. The arm was quite cold; but the swelling extended to the shoulder, and down the side of the body, producing a fulness with evident extravasation of blood, as low as the loins, and giving a mottled appearance to the back on the right side. The surface of the swollen part was very extensively vesicated in the course of the present day (the 18th); there was a tremulous motion of the lips; the fainting fits were perpe-

* Phil. Trans. 1810, p. 75.

GEN. VI. SPEC. V. Erythema anatomicum.

tually recurring; his limbs twitched; his stomach rejected what was introduced into it; and the skin of the whole arm had a livid appearance similar to what is met with in a dead body. Brandy and opium were now given him, instead of ammonia, but in the ensuing morning his pulse was scarcely perceptible; his extremities were cold, and he spoke in whispers. He was in this manner kept alive by nutritive and stimulant means; the constitutional symptoms appeared in five or six days to be diminishing, and the venom to have spent its force; insomuch, that the present writer made a minute on October 25th that "he seems upon the whole to be recovering." He had not however strength enough left to cope with the extensive mortification which had taken place in the arm and axilla; and died November 4, at half past four in the afternoon.

Venom of less virulent serpents, approaches more nearly the nature of the local erythema anatomicum.

In serpents whose venom is less virulent, a ligature tied a little above the bite, and continued for only an hour, will often prevent the action of absorption, and render the disease chiefly local; in consequence of which, as in the local modification of anatomic erythema, the patient escapes with a far less degree of danger. But the most active and malignant of all the serpentine poisons is that of the rattle-snake. All other serpents have an immunity against each other's bite; but the rattle-snake not only kills every other and even its own kind, but by being so far irritated as to inflict a personal wound, has been found to kill itself.

Mortality of the rattle-snake's venom compared with that of other serpents.

Remedial process not well known.

A highly stimulant diet, though most essential in the bite of the more poisonous serpents, does not seem to be of equal use in the erythema before us; nor, in the slighter cases, has any benefit been found from the use of a ligature. The excitant plan has been tried by some, and the antiphlogistic by others; but both too have often failed, and a remedial mode of practice is still a desideratum.

General hints upon the subject: local treatment.

Considering the great benefit that results from fixing the inflammation in the hand and fore-arm, it appears reasonable, that our first attempt should be to concentrate or recall it towards the punctured or abraded part; not by destroying the life of such part, as has too often been done, by caustics, but by powerful and pungent irritants, as camphor, turpentine, or ammonia. Or if within half an hour or an hour from the date of the injury, by the ap-

plication of cupping-glasses; the great benefit of which practice in preventing the absorption of poison from venomous animals has been satisfactorily ascertained by Dr. Barry's experiments, as we have already had occasion to remark *. Our next object should be to counteract the inflammation that takes place in the axilla and in the region of the pectoral muscle, by a free use of leeches or cupping-glasses; while the constitutional symptoms should be opposed by opiates and sudorifics. We have already seen the high and critical advantage which has arisen from a general diaphoresis: and the present author has observed more benefit from a free use of Dover's powder acting in this manner, and allaying the nervous and constitutional irritation, than from any other medicine whatever. In the meanwhile, the diet should be moderately stimulant, and the bowels must be kept duly open.

Gen. VI. Spec. V. Erythema anatomicum.

Constitutional treatment.

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## SPECIES VI.

## ERYTHEMA PERNIO.

### *CHILBLAIN.*

INFLAMMATION OF A CRIMSON COLOUR, SUFFUSED WITH BLUE; OBSTINATELY ITCHING; CHIEFLY AFFECTING THE EXTREMITIES DURING WINTER.

THIS species offers us the two following varieties:

Gen. VI. Spec. VI.

α Simplex. The cuticle remaining unbroken.
Simple Chilblain.

β Exulceratus. Accompanied with ulceration.
Kibe.

The extremities principally affected by the chilblain are the hands and feet; but, in very cold climates, the nose, ears, and lips are affected also, and the living power is

Nose and lips sometimes affected.

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* See his Experimental Researches on the Influence exercised by Atmospheric Pressure, &c. 8vo. 1826.

GEN. VI. SPEC. VI. Erythema pernio.

destroyed as completely as by combustion. So correctly has our great epic poet described the power of severe frost:

> The parching air
> *Burns* frore, and *cold* performs th' effect of *fire*.

Proximate cause.

That the pernio or chilblain belongs to the genus erythema is perfectly obvious, not only from its symptoms, but from the character of the age and constitution in which it is chiefly to be met with, and from the stimulant mode of treatment by which alone it is to be cured.

The proximate cause of chilblains is a diminution of the excitability or vital energy of the extreme vessels; and as such diminution is most readily produced in children, or older persons of relaxed fibres, these are most subject to the disease. For though we often meet with it also in strong and hardy boys, it will usually be found that the last, from the natural vigour and courage of their frames, have braved the cold and rigid reign of the winter-season beyond the venture of their school-fellows.

Treatment.

Local stimulants, then, are the only applications that will answer; and particularly those which serve at the same time to defend the weakened organ from the severity of the external air. Hence, oil-skin socks worn day and night are useful, and warm diachylon or Burgundy pitch, spread upon leather still more so. For the same reason embrocations of spirits of turpentine, opodeldoc, liquor ammoniæ acetatis, or equal parts of vinegar and spirits of wine, will usually be found serviceable. Linnéus recommends bathing the part with diluted muriatic acid; and this has the advantage of being astringent as well as stimulant. The weakened vessels should never be too much distended, and hence, though gentle warmth and stimulants are indispensable, great heat, and especially a near approach to a fire, and more particularly still when very cold, will always be found injurious. When the inflammation becomes ulcerated, or forms a kibe, warm and irritant dressings will alone succeed in effecting a cure; and if fungous granulations should appear, which they are very apt to do in all sores accompanied with debility, they must be removed by a dressing of the unguentum hydrargyri nitrati, or some other mild escharotic.

The weakened vessels not to be distended.

Hence fire to be avoided.

## SPECIES VII.

## ERYTHEMA INTERTRIGO.

### *FRET. EROSION OF THE SKIN.*

COLOUR OF THE INFLAMED PART BRIGHT RED; CUTICLE ERODED; THE EXPOSED SKIN OOZING A LIMPID AND ACRIMONIOUS FLUID.

GEN. VI. SPEC. VII.

THE fret or erosion which frequently takes place in different parts of the skin from an acrid secretion of the exhalants or sebaceous glands, and particularly behind the ears, about the groins, and around the anus, is usually accompanied with erythematic redness, or inflammatory blush; and is hence generally, and correctly, referred to the present place. It is an erythema with weak, vascular action, and often considerable irritability in consequence of such weakness.

Cause.

Chiefly found during dentition.

The most common example of this species is that which takes place behind the ears of children of a delicate habit, or who labour under irritation from teething, or from gross indulgence in luxuries. The discharge is often peculiarly offensive, and hence cannot proceed merely from defective absorption, for it would then be nothing more than saline without fetor. It cannot be checked too soon; for if it continue for a few weeks, or perhaps even less, it may acquire a habit, the suppression of which may run the risk of superinducing some worse disease than itself, as dyspepsy, diarrhœa, or convulsions. The organ affected should be kept well washed to prevent the spread of the morbid secretion, and the discharge should be imbibed by dry and scorched rags applied to the part, or starch frequently dusted over it*. But the irritability is here best subdued by the tonic and astringent powder of many of the metallic oxydes, particularly that of cerusse, which is one of the most valuable as well as one of those in most common use.

Discharge offensive.

Cannot be checked too soon.

Treatment.

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* J. P. Frank, De Cur. Hom. Morb. Epit. tom. iv. p. 113. Mannh. 8vo. 1792.

# GENUS VII.

## EMPRESMA.

### *VISCERAL INFLAMMATION.*

DERANGED FUNCTION OF A VISCERAL ORGAN, MEMBRANOUS OR PARENCHYMATOUS; WITH LOCAL PAIN; FEVER MOSTLY A CAUMA; INFLAMMATION MOSTLY ADHESIVE.

GEN. VII. General explanation of the genus as importing visceral inflammation.

THE genus of diseases upon which we now enter, consists of that numerous collection of visceral inflammations which, from the time of Boerhaave, have been generally distinguished by anatomical terms derived from the organ affected, with the Greek term *itis* added as a suffix, as cephalitis, gastritis, carditis, and many others. *Itis* is sufficiently significant of its purpose: it is immediately derived from ἰτέα, which is itself a ramification from ἴω, and imports, not merely action, "putting or going forth," which is the strict and simple meaning of ἴω, but action in its fullest urgency, "violent or impetuous action." As a suffix, therefore, we shall retain it in its common use, and proscribe it, to prevent confusion, from the few compounds, or proscribe the compounds themselves, in which this common use is departed from; as rachitis, hydro-rachitis, ascites, and tympanites, none of which convey any idea of violent or impetuous action, and some of which are peculiarly marked by a contrary state.

Hitherto expressed by terms terminating in itis.

Hence importing a common relation.

This application of a common term in composition to so large a body of visceral inflammations, and the general use of the term for so long a period as that throughout which it has been employed, is a sufficient proof, that practitioners have discovered between these inflammations other features of resemblance, than the general symptoms of inflammatory disorder. In the prosecution of the subject we shall find that this is the fact: and I have already observed, in the opening remarks upon the present order, that, with a very few exceptions, the inflammation in all the diseases is of the adhesive kind, and the fever a cauma.

Gen. VII. Empresma.

With a view, therefore, of simplifying, as far as simplicity may be of real use, the present system will, for the first time, comprise the whole of these under one genus, here distinguished by the name of EMPRESMA, or "internal inflammation;" a term, in its simple form, employed both by Hippocrates and Galen, and which it seems necessary to revive for the present purpose.

Etymological meaning of Empresma.

General sympathy of the organs concerned: especially with the stomach.

Many of the organs included under the genus before us, and which we shall presently follow up in their respective order, sympathize with each other, and most of them with the stomach. The necessary consequence of which is, that the constitution is disturbed generally, though in very different degrees according to the organ affected; or, in Mr. Hunter's opinion, according to the different degree of its connexion with the stomach.

Inflammation in the vital organs more extensively felt than in other organs.

If the heart, the lungs, or the brain be inflamed, whether primarily, or secondarily, as by sympathy, the stomach is peculiarly influenced, probably from the essential importance of these organs to life itself (as all the vital organs, or those essential to life, maintain a very close degree of affinity); and the disease originating in any of these, has, in consequence, a more violent effect upon the constitution than the same quantity of inflammation would have if it were not in a vital part, or in one with which the vital parts do not sympathize. The pulse, in such cases, is much quicker and smaller than when inflammation takes place in a common part, as a muscle, cellular membrane, or the skin. The progress, moreover, when the attack is so violent as to prove fatal, is, generally speaking, far more rapid than in other parts; so that, at its very beginning, it has the same effect upon the constitution as a farther advance of an inflammation in other organs that is equally sure of proving fatal in its result. The debility commences early, because the inflammation itself is immediately interfering with actions essential to life; and, as already observed, the sympathy between these organs is peculiarly close, insomuch so as almost to make any single action common to the whole*.

More rapid and more fatal.

Inflammatory symptoms vary

In inflammation of the brain the pulse varies, perhaps, more than in inflammation in any other part; and we must

* Hunter, On Blood, &c. p. 325.

GEN. VII. Empresma. in different organs.

rather depend upon other symptoms than upon the state of the pulse. It is sometimes quick, sometimes slow, sometimes depressed, sometimes full, according as the disease is characterized by acute pain, delirium, stupor, or other concomitants.

Inflammation of the brain.

Inflammation of the heart.

When inflammation is seated in the heart, its action becomes extremely agitated and irregular. When in the lungs, the heart, possibly from sympathy, does not seem to allow of a free diastole.

Inflammation of the stomach.

If the stomach be inflamed, the patient feels an oppression and dejection through all the stages of the disease. The vital energy or simple animal life seems to be impaired and lessened in the same manner as sensation is lessened when the brain is injured. The pulse is generally low and quick; the pain obtuse, but urgent and overwhelming; so that the patient can hardly bear up under it.

Inflammation of the intestines.

If the intestines be affected, the symptoms are nearly of the same kind, especially if the inflammation be in the upper part of the canal; but if it be seated in the colon the patient is more roused, and the pulse is fuller than when the stomach itself is inflamed.

Inflammation of the uterus.

If the uterus be the organ attacked, the pulse is extremely quick and low: if one of the testicles, the pain is depressing, and the pulse quick without much strength. With the uterus, the testicles, and the intestines, the stomach peculiarly sympathizes; often, indeed, as much as if itself were primarily affected. If we contrast these species of inflammations with those that attack parts not very essential to life, but with such a degree of violence as to produce universal sympathy and affect the vital functions, we shall find that, in the latter, the pulse is fuller and stronger than common; and the blood is pushed further into the extreme arteries. The attack usually commences with rigor; the patient then becomes somewhat roused because the action of the part is roused, and the effects on the constitution are not yet such as to impede the operations of the vital organs. Much, however, will still depend upon the nature of the parts, whether active, as muscles, or inactive, as tendons; as also upon the situation of the same description of part, and especially upon the character of the constitution: for if the last be extremely irritable and weak, as in many women who lead sedentary lives,

These symptoms contrasted with those of other parts less essential to life.

the pulse may be as quick, hard, and small, even at the commencement of the inflammation, as in inflammation of the vital parts. The blood, moreover, may be sizy, but will be loose and flat on the surface. It is singular to observe, how very rarely the pancreas is subject to inflammation, or even to disorders of any kind. "The pancreas," observes Dr. Baillie, "is upon the whole less liable to disease than any other important gland in the body. I do not recollect that, in private practice, I have met with one case in which there was satisfactory evidence of the pancreas being diseased; and I have only known of a solitary example of it during the thirteen years, in which I was physician of St. George's Hospital*." [Now, however, that morbid anatomy is more extensively and zealously cultivated than it was thirty years ago, examples of diseased pancreas are more frequently met with. On the whole, however, the pancreas, like the salivary glands, to which it is analogous, is, comparatively speaking, seldom diseased. The subject has been already noticed in the preceding volume.] GEN. VII. Empresma. Visceral inflammation.

Having premised these general remarks, we are the better prepared for examining the relations, which the numerous species, belonging to the present genus, bear to each other; and satisfy ourselves with a more summary account of several of them, than would otherwise be necessary.

These species are as follow:—

| | | |
|---|---|---|
| 1. | EMPRESMA CEPHALITIS. | INFLAMMATION OF THE BRAIN. |
| 2. | ——— OTITIS. | ——— OF THE EAR. |
| 3. | ——— PAROTITIS. | MUMPS. |
| 4. | ——— PARISTHIMITIS. | QUINSY. |
| 5. | ——— LARYNGITIS. | INFLAMMATION OF THE LARYNX. |
| 6. | ——— BRONCHLEMMITIS. | CROUP. |
| 7. | ——— PNEUMONITIS. | PERIPNEUMONY. |
| 8. | ——— PLEURITIS. | PLEURISY. |

* Lectures and Observations on Medicine, by the late Matthew Baillie, M.D., 1825, unpublished.

Gen. VII. Empresma. Visceral inflammation.

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| 9. | EMPRESMA CARDITIS. | INFLAMMATION OF THE HEART. |
| 10. | ——— PERITONITIS. | ——— OF THE PERITONÆUM. |
| 11. | ——— GASTRITIS. | ——— OF THE STOMACH. |
| 12. | ——— ENTERITIS. | ——— OF THE BOWELS. |
| 13. | ——— HEPATITIS. | ——— OF THE LIVER. |
| 14. | ——— SPLENITIS. | ——— OF THE SPLEEN. |
| 15. | ——— NEPHRITIS. | ——— OF THE KIDNEYS. |
| 16. | ——— CYSTITIS. | ——— OF THE BLADDER. |
| 17. | ——— HYSTERITIS. | ——— OF THE WOMB. |
| 18. | ——— ORCHITIS. | ——— OF THE TESTICLES. |

## SPECIES I.

## EMPRESMA CEPHALITIS.

### *INFLAMMATION OF THE BRAIN.*

PAIN IN THE HEAD; AVERSION TO LIGHT; FACE MORE OR LESS FLUSHED; CAUMA.

Gen. VII. Spec. I. General pathological remarks.

THE pathology of cephalitis, or inflammation of the brain, is, in some degree, obscure and difficult, from the difference which occurs in several of its secondary or concomitant symptoms; occasioned partly, perhaps, by the difference of its exciting cause, partly by the particular portion of the organ that is primarily or chiefly affected, and partly by circumstances which seem to baffle all research. From this occasional difference of symptoms, some nosolo-

gists have endeavoured to establish as many distinct affections, and have hence multiplied a single specific disease into a considerable number of distinct species, and even genera, and treated of it under a fearful host of distinct names: and hence the disease before us has been described, not only under the term cephalitis, but under those of phrenitis, paraphrenitis, phrenismus, sideratio, siriasis, sphacelismus, and typhomania, calentura, and a great many others, which have burthened the medical vocabulary, and perplexed the medical student.

GEN. VII. SPEC. I. Empresma cephalitis. Inflammation of the brain.

The disease may commence in the meninges, or membranes of the brain, or in the substance or parenchyma of this organ. [In its activity, it varies from the highest degree of acute to the lowest degree of chronic or scrofulous inflammation, and with numerous modifications, by which the different forms pass into one another by almost insensible gradations. It may terminate by serous effusion; by the deposition of false membrane; by suppuration; or by a peculiar softening of the cerebral substance*.] If it were to confine itself strictly to the part first affected, instead of spreading from one part to another, there would perhaps be no great difficulty in determining, from the symptoms before us, its direct and actual seat; for while membranous and muscular inflammation, before the access of gangrene, is accompanied with an acute and rousing pain, great heat, and a pulse considerably and permanently quickened, parenchymatous inflammation is rather distinguished by a heavy, and often a stupifying pain, a slight increase of heat, and a pulse irregularly quickened, sometimes sinking even below its natural standard†.

Disease may commence in the membranes, or the substance of the brain.

Original seat, how distinguishable.

Now both these conditions are occasionally found in different cases of cephalitis; and we may hence infer, that, in the one instance, the disease is seated chiefly, if not altogether, in the meninges, and, in the other, in some part of the substance of the brain itself, thus presenting to us the two following varieties:

α Meningica. Pain in the head acute; into-

* See Abercrombie's Pathological and Practical Researches on Diseases of the Brain, p. 5. 8vo. Edin. 1828.

† Hunter on Blood, &c. p. 288, 289.

GEN. VII. SPEC. I. Empresma cephalitis. Inflammation of the brain.

Phrensy.
Brain-fever.

β Profunda.
Deep-seated inflammation of the brain.
Acute dropsy of the head.

lerance of light and sound; cheeks permanently flushed; eyes red; watchfulness; delirium; pulse rapid.

Pain in the head obtuse; cheeks irregularly flushed; pulse irregularly frequent; eyes oblique; sleep heavy, but unquiet; and occasionally interrupted by screams. Chiefly common to children.

The varieties apt to run into each other:

The above clear and distinctive marks, however, by which the two varieties are separated from each other in exact cases, are not often to be met with; as each, for reasons already given, is apt to assume something of the character of the other. And hence they have hitherto escaped the attention of almost all our nosologists, even of those who have subdivided inflammation of the brain into the greatest number of distinct genera or species of disease; whilst Vogel expressly declares, that all the most acknowledged symptoms of inflammation of the brain are equivocal, not only as to a distinction of one morbid part from another, but as indicative of inflammation in any part; and Dr. Cullen asserts in a note subjoined to his *generic* definition (for he advances the disease to the rank of a genus, and a genus too without a species or a specific character), that there are no symptoms capable at all times of distinguishing, with certainty, inflammation of the brain from inflammation of its meninges. On which account, he deviates from the more complicated arrangements of Sauvages, Linnéus, and Sagar, and includes several of their genera in his own definition, which runs in more general terms as follows: " pyrexy severe; pain of the head; redness of the face and eyes; intolerance of light and sound; watchfulness; fierce delirium, or typhomania."

and hence, not sufficiently noticed by nosologists.

Treated of too generally by Cullen.

There is so much correctness in this remark of Dr. Cullen's, notwithstanding the error of his arrangement, that the present author yielded to it in the first edition of his Nosology, and introduced cephalitis, not indeed as a naked genus without a specific character, but as a single species without enucleating its varieties; or, in other words, with-

out treating of deep-seated inflammation, constituting acute internal dropsy of the brain, separately from inflammation of the head generally. It may, perhaps, be doubted whether acute dropsy of the brain ought to be regarded as an idiopathic inflammation at all, and consequently whether the present is the proper place for it; but the reasons which will immediately be advanced will, I trust, settle this point completely. And as, upon a closer attention to the subject, notwithstanding Dr. Cullen's remark, I am induced to think, that there are cases in which parenchymatous or deep-seated inflammation may be distinguished from meningic, I have so far deviated from the first arrangement as to give these distinctions under the form of the above varieties.

Gen. VII. Spec. I. Empresma cephalitis. Expediency of the present subdivision;

I admit, nevertheless, with Dr. Cullen, that there are no symptoms capable *at all times* of distinguishing, with certainty, inflammation of the substance of the brain from inflammation of its meninges; and only contend, that the distinction may be drawn in certain cases in which the disease is simple, and the characters strong and unmixed; and strikingly indicative of membranous or parenchymatous inflammation, according to the general rules just laid down upon this subject.

though the distinctive marks cannot always be traced.

It is possible, indeed, that meningic inflammation may occasionally be still more limited, and exist chiefly or altogether in one of the membranes alone, as the arachnoid; whence some pathologists have set down ARACHNITIS as a sub-variety of the meningic form: but as such minute derivations can never be supported by pathognomonic symptoms, nor lead to any practical utility, I cannot but prefer the example of Professor Frank, and indeed of most of the Italian pathologists, in rejecting them, to that of Pinel and other French writers*, in introducing or retaining them.

Arachnitis, what.

[Dr. Abercrombie, who uses the term *meningitis*, to express inflammation of the arachnoid, or pia mater, or both, as distinct from inflammation of the dura mater, finds that it is not characterized by any uniformity of symptoms. In some cases, it comes on with head-ache, vomiting, fever,

Diagnosis of uncombined meningitis.

* Recherches sur l'Inflammation de l'Arachnoide, &c. Par P. Duchatelet, M.D., &c. et I. Martinet, M.D. 8vo. Paris, 1821.

GEN. VII. SPEC. I. Empresma cephalitis. Inflammation of the brain.

and impatience of light; but more commonly with a sudden and long-continued paroxysm of convulsions, sometimes preceded by head-ache and vomiting, sometimes without any warning. In some examples, the convulsion passes immediately into coma, which afterwards alternates only with a repetition of the convulsion, until death. In other cases, there is a recovery from the first convulsion, and the patient appears to be doing well; but afterwards falls into coma, with or without a recurrence of the convulsion; while, in certain other instances, no convulsion occurs till a late period of the disease.

Of inflammation of the substance of the hemispheres.

On the other hand, inflammation of the substance of the hemispheres is said to be attended with symptoms, which also vary considerably, according to the extent of the disease, and the particular part of the brain which is the seat of it. In some cases, head-ache is followed by high delirium, and this by coma. In others, there is a sudden attack of convulsion. A frequent form of the disease is characterized by head-ache, followed by convulsion of one or more limbs; these afterwards becoming paralytic. The disease may be fatal in the inflammatory stage: that of ramollissement, simple or combined with partial suppuration; that of undefined suppuration; that of encysted abscess; or that of ulceration of the surface of the brain *.]

Distinctive marks discoverable more frequently in meningic than in deep-seated cephalitis. Whence the first is universally described:

I believe that a simple and unrestricted appearance of inflammation is more frequently to be traced in meningic, than in profound or parenchymatous cephalitis; or, in other words, that in primary inflammation of the substance of the brain, the meninges are more disposed to partake of the affection either by continuous action or sympathy, than the substance of the brain is in primary inflammation of meninges. And hence, those nosologists that describe but a single species or *genus* of this disease, as it has been often though incorrectly denominated, like Vogel, Cullen, and Parr, lean chiefly to the meningic variety, and define it by characters of great vehemence or acuteness, so as in reality to limit themselves to this variety alone. Yet as the symptoms do not always, nor even most frequently, mount up to this aggravation, in consequence of the dis-

* See Abercrombie's Pathol. Pract. Researches on Diseases of the Brain, p. 50 and 70.

ease more commonly originating, or being more commonly seated, in the substance of the brain itself than in its membranes, they have all been dissatisfied with their respective definitions; and, instead of enlarging or modifying their terms to meet the distinctive phenomena as they vary according to the seat of the disease, have endeavoured to apologise for their own inaccuracy, by representing these phenomena as irreducible and anomalous.

Gen. VII. Spec. I. Empresma cephalitis. Inflammation of the brain.

The first variety, therefore, exists in the judgment and even in the description of all writers, who, where they have not entered into more minute subdivisons, have given it as the general character of the complaint.

and given as a general character of the disease.

The existence of the second variety, or, in other words, the propriety of regarding what has hitherto been denominated acute or internal hydrocephalus as a variety of cephalitis, requires to be examined somewhat more at length.

Reasons for admitting the second variety.

The absurdity of the usual arrangement of internal hydrocephalus, and of contemplating it as belonging to the ordinary family of dropsies, with which it has scarcely a common symptom, has long been felt by pathologists, and is directly noticed both by Sauvages and Cullen. But the question is, if we remove it from its usual situation, where are we to place it? if we do not regard it as a dropsy, in what light are we to contemplate it at all? and how are we to regulate our treatment of it? The professor of Montpellier tells us that, according to its symptoms, it is to be ranked in the comatose, spasmodic, or some other tribe of diseases: distinctly importing that, in his own opinion, he could not refer it to any single division in his very extensive classification. Dr. Cullen's reply is, that it is an evident and idiopathic species of *apoplexia*, and ought to take its place under that genus; and he has hence distinguished it by the appellation apoplexia *hydrocephalica*, and in this manner assigned it "a local habitation and a name." In reference to this assignment he observes, however, that, in a nosological work, it is difficult to collate exactly diseases that in their progress assume a changeable form, and hence to allot a perfectly fitting place to hydrocephalic apoplexy. "Yet I prefer," says he, "placing this disease under the head of apoplexy, to placing it under that of hydrocephalus (dropsy of the head); first, as it differs extremely from

Absurdly regarded as belonging to dropsies.

How far an apoplexy.

GEN. VII. SPEC. I. Empresma cephalitis. Inflammation of the brain.

the symptoms of sensible (external) dropsy of the head; and next, as in its proximate cause, and at length in its symptoms, it bears to apoplexy as near a relation as possible."

Dr. Cullen evidently regarded the effusion or dropsy in the ventricles of the brain as a mere effect of the disease, rather than as the disease itself; yet the drowsiness, or heavy sleep, or whatever else there is akin to apoplexy, and which he contemplated as the proximate cause of the disease, and consequently as the disease itself, is a still more remote effect than even the effusion, for it is probably the mere result of such effusion. In truth, it is only necessary to run over Dr. Cullen's specific definition of this disease, to see how very little it has in common with apoplexy. This definition is as follows: "apoplexy arising gradually; affecting infants, and the age below puberty, *first* with lassitude, feverishness (*febriculâ*), and pain of the head; *afterwards* with a slower pulse, dilatation of the pupil, and somnolency." The definition includes two stages of disease, if not two distinct diseases, a primary and secondary: and it is only in the second stage or secondary disease, the mere result of the first, that it bears any analogy to apoplexy.

Mistake of the effect for the cause.

First and leading symptoms pyrectic.

The first and leading symptoms are evidently those of pyrexy, which is therefore the fundamental part of the disease; and had not Dr. Cullen been in some degree influenced by system, he would probably have coloured these symptoms a little more highly, as he might have done without any departure from the truth. And hence, while Dr. Parr, Dr. Young, and a few others, have adhered to Dr. Cullen's view of the subject, the great body of pathologists have been dissatisfied with it, and have correctly carried internal hydrocephalus over to the class of pyrexies, and regarded it as a fever or an inflammation. Thus, in Dr. Macbride's table, it occurs as a nervous fever, under the title of febris continua, nervosa, hydrocephalica: and more simply under that of febris hydrocephalica, in Professor Daniel's edition of Sauvages; whilst Dr. Quin of Dublin, Dr. Withering, Dr. Rush, Dr. Golis, Professor Martini, and a host of other writers of authority, have contemplated and treated it as an inflammation,—an inflammation of the brain,—and consequently a cephalitis; in the language

By whom regarded as an inflammation.

of Dr. Coindet, Céphalite interne *hydrencéphalique**; in that of Dr. Golis *wasserschlag*†, or water-stroke, from its violence; the fever being regarded as a mild and somewhat irregular cauma, and the effusion into the ventricles of the brain as a mere effect of the inflammation. GEN. VII. SPEC. I. Empresma cephalitis. Inflammation of the brain.

This is not the only instance, indeed, in which cauma assumes a mild character. In various other species of empresma, it is often found to do the same, of which the reader will find an interesting example under the species laryngitis, a few pages further on: and of which every practitioner is meeting with daily instances in pneumonitis, and especially in inflammation of the parenchyma of the lungs producing suppuration. The general organ of the brain, however, seems to have less irritability than almost every other organ when in a state of health, and we often find it to be little irritable in a state of lesion; since nothing is more common than for a bullet, or the broken point of a knife, sword, or other weapon, to be forcibly driven into it, and buried there for weeks, months, or years‡, in one instance eleven years§, not only without danger, but sometimes with little inconvenience. The inflammatory fever not always acute and rapid:

In the third number of the Medico-Chirurgical Journal, there is an excellent paper upon the subject before us, by Dr. Porter of Bristol, which commences with a very correct pathological view of the disease, minutely coinciding with the present arrangement, and confirming this view by a variety of strongly marked and well selected cases. And I am glad to avail myself of Dr. Porter's authority in following up this second variety of cephalitis into a distinct and extended illustration. Dr. Porter's view.

[The view, adopted by the foregoing authorities and by Dr. Good, receives important corroboration from the statements of that distinguished pathologist, Dr. Abercrombie, who has observed‖, that, in the earlier investigations of Acute hydrocephalus effect of inflammation.

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* Mémoire sur l'Hydrencephale, ou Céphalite Interne Hydrencéphalique, par J. F. Coindet, M. D., Médecin en chef des Hospices de Genève. Geneva, 1818.

† Praktische Abhandlungen über die vorzüglicheren Krankheiten des kindlichen Alters. band I. Wien, 1815.

‡ Gooch's Cases. Hoegg. Diss. Observ. Medico-Chir. Jen. 1762.

§ Majanet, Journ. de Med. tom. xli. 65. Id. tom. xx. 553.

‖ On Diseases of the Brain, p. 19. Also Dr. Mills, in Trans. of Assoc. of King's and Queen's Coll. of Physicians, vol. v. p. 353.

GEN. VII. SPEC. I. Empresma cephalitis. Inflammation of the brain.

this class of diseases, too much importance was perhaps attached to the effusion, as if it alone constituted the disease called acute hydrocephalus. The symptoms were ascribed to the compressing influence of the effused fluid, and the practice was directed chiefly or entirely to the promotion of its absorption. It is now, says Dr. Abercrombie, very generally admitted, that the effusion in acute hydrocephalus is to be considered as one of the terminations of inflammatory action within the head, though there are certainly other causes from which the serous effusion may arise. Dr. Mills proposes to call the acute species, arising from inflammatory action, *hydro-cephalitis*.]

Proofs derived from dissection.

In few words, both varieties not only evince symptoms of inflammation during the progress of the disease, but anatomical proofs of the same upon dissection after the disease has terminated fatally; in the meningic subdivision, the complaint commencing in and being ordinarily confined to the meninges or membranes of the brain, the blood-vessels chiefly affected with inflammatory action being the meningic branches of the external carotid; and, in the deep-seated subdivision, the complaint commencing in and being ordinarily confined to the posterior part of the brain, the blood-vessels chiefly affected being minute branches of the basilary artery. It is nevertheless possible, and appears often to become a fact, from the anastomoses that are occasionally found between different arteries of the brain, from the continuous spread of morbid action from neighbouring sympathy, or from some unknown cause, that either variety may pass still deeper or wider into the substance of the brain, and make an approach towards the other; and hence the mixt, anomalous, and even contradictory symptoms, by which the specific character is sometimes distinguished*; a striking example of which, but too long to be quoted, is to be found in the Edinburgh Medical Commentaries†.

"In three cases," says Dr. Sagar, "I have found suppuration of the brain after death; in each of which the patient during the progress of the disease breathed sonorously, but without stertor‡." Whether, in the case of

* J. P. Frank, De Cur. Hom. Morb. Epit. tom. ii. p. 48. Manh. 8vo. 1792.
† Vol. ix. p. 164. ‡ Syst. Morb. Sympt. Cl. xi. Ord. iii. Gen. xii.

effusion between the membranes, the fluid be confined, where the disease commences in the meninges, to the space between the dura mater and the arachnoid tunic, and where it commences in a contiguous part of the brain, to that between the arachnoid tunic and the pia mater, as asserted by Dr. Porter, I have not been able to determine.

Gen. VII. Spec. I. Empresma cephalitis. Inflammation of the brain.

We may hence explain why the symptoms of irritation and oppression should so much vary as we find they do in different cases; why there is sometimes no delirium and at other times a considerable degree; why the delirium is sometimes furious and impetuous, constituting the *delirium ferox* of medical writers; why, in other instances, it is mute or muttering, designated by the phrase *delirium mite;* why there should occasionally be examples of that comatose or heavy stupor to which the Greeks gave the name of typhomania; and why the pain and pyrectic symptoms should vary from great acuteness to a mere disquieting head-ache and slight increased action: as also why, in a few cases, there should not only be found suppuration, but examples of that mollifaction, or softening of the brain, the *Ramollissement de cerveau* of M. Rouchoux* and other French writers, which is more frequently traced in apopletic subjects, and of which we shall have to treat when discussing the disease of apoplexy.

Hence various anomalies explained.

Ramollissement de cerveau.

Except in a few cases, in which it is brought on by the abuse of strong liquors, and, in warm climates, by exposure to the intense heat of the sun†, PHRENSY is not often found as an idiopathic complaint, though it is a frequent attendant upon other diseases, as synochus, worms, various exanthems, trichoma, hydrophobia, injuries of the brain, and severe grief. [The diagnosis of inflammatory affection of the brain, as laid down by Dr. Abercrombie, seems faithful and correct. His account, however, refers to inflammation of the brain, in its several modifications and consequences, and not merely to acute cephalitis. In the head: violent head-ache, with throbbing and giddiness, sense of weight and fulness, stupor, a great propensity to

α E. Cephalitis meningica.

Diagnostica.

* Dictionnaire de Médecine, tom. ii. Paris, 1822.

† Abercrombie on Diseases of the Brain, p. 6.

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sleep. In many obscure and insidious cases, a constant feeling of giddiness is the only remarkable symptom. In the eye: impatience of light, unusual contraction or dilatation of the pupil, double vision, squinting, blindness, distortion of the eyes outwards, paralysis of the muscles of the eyelids, objects seen that do not exist, long-sightedness suddenly changed into ordinary vision. In the ear: transient attacks of deafness, great noise in the ears, or unusual acuteness of hearing. In the speech: indistinct or difficult articulation, unusual quickness or slowness of speech. In the pulse: slowness and remarkable variations in frequency. In the mind: high delirium, transient fits of incoherence, peculiar confusion of thought, and forgetfulness on particular topics. In the muscles: paralytic and convulsive affections. In the urine: frequently a remarkable diminution of the secretion, often joined with a frequent desire to void it.

Abercrombie on the diagnosis.

In this important diagnosis, as Dr. Abercrombie justly remarks, minute attention to the correspondence of the symptoms is of more consequence than any particular symptom. Thus, the peculiar oppression, which accompanies a high degree of fever, is not an unfavourable, symptom; but the same degree of oppression occurring without fever, or with a very slight fever, would denote a head affection of much danger. A degree of head-ache and delirium, accompanying a high fever, would only be symptomatic; but accompanying slight fever, would indicate a dangerous affection of the brain *.] Cephalitis sometimes makes a near approach to mania; but is easily distinguished by the nature of the exciting cause, where this can be ascertained, the abruptness of the attack, and the violence of the fever; added to which there is in phrensy, for the most part, though not always, a hurry and confusion of the mental powers, a weakness and unsteadiness of mind, which is rarely or perhaps never to be met with in genuine mania. It sometimes, however, runs into mania, of which Stoll has given a singular instance in a chronic case that continued for nine weeks before it assumed this change †.

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* Abercrombie, op. cit. p. 17. † Rat. Med. sect. iii. p. 179.

[From circumstances noticed by Dr. Abercrombie, it appears probable, that, in this form of the disease, the inflammation is primarily seated in the membranes of the brain. Another affection of frequent occurrence, referred by Dr. Abercrombie to this head, is characterized by a peculiar aberration of mind, without any complaint of pain. There is a remarkable restlessness, quickness, and impatience of manner, obstinate watchfulness, and incessant rapid talking, the patient rambling from one subject to another, but often without any actual hallucination; he knows persons about him, and answers distinctly questions put to him. The pulse is rapid, but other symptoms of fever are absent. The disease is sometimes mistaken for mania, and set down as not dangerous, though often rapidly fatal. On dissection the chief appearance is a highly vascular state of the pia mater, without any actual result of inflammation.

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A second modification of inflammation of the brain, particularly described by Dr. Abercrombie, is that which comes on with a sudden attack of convulsion, followed by palsy, and putting on the appearance rather of an apopletic, than of an inflammatory affection. It is generally connected with inflammation of a portion of the cerebral substance, but may also occur in combination with inflammation of the membranes. This modification may also take place in a more chronic manner, in which it continues for months. In such cases it is generally distinguished by head-ache, often confined to one side of the head; loss of memory; affections of various organs, as the eye, the ear, or the tongue; convulsive affections; palsy of one limb or one side of the body; terminating in coma and death. On dissection, *ramollissement* or suppuration of a part of the brain is generally met with; but sometimes the part is of a dark colour, and rather firmer, than the surrounding parts*.

Modifications of cephalitis described by Abercrombie.

A third modification, noticed by the same physician, most commonly affects children, but sometimes adults. It is usually preceded for a day or two by languor and peevishness, which are followed by fever, sometimes ushered in by severe shivering. The patient complains of acute pains in some part of the head, with flushing of the face, and im-

* Op. cit. p. 7. and 17.

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patience of light. In many cases, there is frequent vomiting. The pain frequently extends along the neck, and is sometimes complained of in the arms and other parts of the body. The pupil is usually contracted; the eye is morbidly sensible, and sometimes suffused; the tongue generally white; the sleep is disturbed by starting and frightful dreams; the bowels are mostly confined; but frequently they are natural, and sometimes loose. After some days, slight delirium begins, or a peculiar forgetfulness shows itself, the patient using one word instead of another, misnaming persons and things, &c. These symptoms are followed by a tendency to sleep, soon changing to coma.

Modifications described by Abercrombie.

While these symptoms are going on, the pulse, which was at first frequent, usually falls to the natural standard, or below it; the pain becomes less violent; the eye loses its acute sensibility, becoming dull and vacant, often with squinting and double vision; and these are often succeeded by dilated pupil and blindness, even before the patient falls into coma. The pulse, having continued slow for a day or two, sometimes only for a few hours, begins to rise again, and attains extreme frequency, and occasionally that of two hundred in a minute. Through the whole course of the disease, it is, according to Dr. Abercrombie, extremely unequal in frequency, varying perhaps every minute, and every time it is counted. This remarkable inequality, he says, is not observed in other diseases, except from some temporary cause; and is, in all affections of the head, a symptom deserving much attention. The patient is now perfectly comatose, sometimes with paralysis, sometimes with convulsions; and, after a few days more, the disease proves fatal. The falling of the pulse, while the child continues in a state approaching to coma, is often the first symptom indicating the alarming nature of the disease.

A fourth form of the disease, depicted by Dr. Abercrombie, proceeds with slight head-ache and febrile disorder, with remissions and aggravations for several days, ere the case assumes any decided character. The head-ache, though not severe, is now remarked to be greater than is correspondent to the fever; and while the pulse falls, and the appetite improves, the head-ache continues. After a few more days, the pulse sinks even to the natural standard, while the head-ache is increased, with an evident tendency

to stupor. This instantly marks a head affection of the most dangerous character, and the patient now lies for several days, in a state of considerable stupor, sometimes with convulsions, often with squinting and double vision. The pulse then begins to rise again; some amendment seems to take place; but a relapse into perfect coma soon follows, and death takes place in three or four days.

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A fifth variety is pointed out by the same practical writer: it begins with violent head-ache, without fever. The pulse is about the natural standard, or even as low as 60. In some cases, the face is flushed; in others, rather pale. The eye may be natural, or it may be impatient of light, with contracted pupil. There is a look of much oppression, and sometimes there is vomiting. Delirium frequently appears at an early period, and in five or six days passes into fatal coma, the pulse having continued from 70 to 80 through the whole course of the disease. In other cases, the pulse is at first above the natural standard, afterwards falls to 60 or 50; and at last rises to 120 or 130. In some cases, vision is not affected; in others, squinting and double vision occur; and sometimes these symptoms, after lasting a day or two, cease, yet the disease goes on to its fatal termination. In every case, there is more or less delirium, though often slight and transient; and frequently the patient lies in a dozing state, and talks incoherently, but is capable of being roused so as to converse sensibly. This condition, says Dr. Abercrombie, when not accompanied by fever, is always characteristic of a dangerous affection of the brain *.]

Modifications described by Abercrombie.

The remote causes of cephalitis are those of inflammation in general applied to the organ affected; such as sudden exposure to cold after great heat; cold liquors incautiously drunk in the same state; inebriation, and especially from spirits; exposure of the naked head to the rays of a vertical sun; violent passions of the mind; obstructed menstruation; accidental injuries; suppressed eruptions of various kinds †; and several kinds of poison.

Remote causes.

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* See Abercrombie's Pathological and Practical Researches on Diseases of the Brain, p. 6—13.

† Frank, ut suprà, tom. ii. p. 51.

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From some of these causes, the inflammation assumes a chronic character; is slow in its progress, and obscure in its symptoms. The symptoms moreover, however connected with a morbid consent in other organs, generally point to the brain as the seat of lesion; and consist of cerebral compression or acute pain in the head, irregularity in the pulse, and some kind of paralysis. M. Lallemand, who has industriously collected a multitude of anomalous cases of this kind, observes, that where the inflammation runs into suppuration, an effort is usually made by nature to form a sac or barrier for its limitation; but that even this effort is often in vain, and still adds to the fatal issue, as the new membrane frequently becomes thickened, and creates a fresh source of irritation*.

Sometimes assumes a chronic character.

[According to the valuable researches of Dr. Abercrombie, the disease may be fatal: 1st, in the inflammatory stage; 2dly, from serous effusion; 3dly, deposition of false membrane; 4thly, suppuration; 5thly, peculiar disorganization, or softening of the brain, or its conversion into a soft pulpy mass, retaining its natural colour, and without the appearance or smell of pus—the *ramollissement* of French writers; 6thly, the terminations in the chronic form are, thickening of the membranes, contraction and obliteration of the sinuses, caries of the bones, &c.]

Remedial treatment.

The cure of phrensy must be attempted in the same manner as that of inflammation in general, or rather as the cure of inflammation by resolution; for resolution is the only means by which a cure can be affected in this case. Copious and repeated bleedings must here therefore hold the first place; and the nearer the blood is drawn from the affected organ, the better chance it gives us of success. The temporal arteries and the jugular veins have hence been recommended as the most effectual vessels to open; but for various reasons it is better to begin with drawing blood liberally from the arm, and afterwards by a free application of leeches to the temples. The head should be shaven as soon as possible, and kept moist with napkins wrapped round it dipped in cold vinegar, or equal

* Recherches Anatomico-Pathologiques sur l'Encéphale et ses Dépendances. Lettre quatrième, 8vo. Paris, 1823.

parts of water and the neutralized solution of ammonia; or, which is still better, with ice-water: all which is preferable to blistering, which is too apt to increase the morbid excitement, and the practice has the authority of Hippocrates, who was in the habit of applying cold epithems, not only in inflammation of the brain, but even of the abdominal viscera*. [Dr. Abercrombie also considers the effect of blistering in the early stages as rather ambiguous. When it is employed, he recommends it to be on the back of the head and neck, where it will not interfere with the more powerful remedy, the application of cold. After the first violence of the disease has been subdued, however, he approves of successive blisters to various parts of the head, and upper part of the spine†.] The bowels should be thoroughly evacuated, and even stimulated, at first by calomel alone, or mixed with jalap, and afterwards kept open by cooling saline aperients; nitre should be given in moderate quantities, repeated as frequently as the stomach will bear; and it is often considerably assisted by the tincture or infusion of digitalis. The chamber should be cool and airy; and no more light be admitted than the eyes can endure without inconvenience.

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Cold epithems.

Blisters.

Purgatives.

[In cases, which assume a more chronic character, Dr. Abercrombie‡ represents the abstraction of blood as having less control over them. In all forms of the disease, he says, active purging is the remedy, from which we find the most satisfactory results; and though bleeding is never to be neglected in the earlier stages of the disease, his experience is, that more recoveries from head affections of the most alarming aspect take place under the use of very strong purging, than under any other mode of treatment. He deems croton oil the most convenient medicine for the purpose.]

Croton oil.

I have said that furious delirium, though generally laid down as a pathgnomonic of this variety of cephalitis, does not always occur; and in a very strongly marked case in

Sometimes but little disturbance of the intellect.

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* Περὶ Νούσων, p. 484.

† See Abercrombie's Pathol. and Practical Researches on Diseases of the Brain, p. 156.

‡ Pathol. and Pract Researches on Diseases of the Brain, p. 157.

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which I was consulted several years ago, the mental powers were not much interfered with.

Internal, or acute dropsy of the head.

PROFOUND or DEEP-SEATED CEPHALITIS, or, as it is more commonly called, ACUTE or INTERNAL HYDROCEPHALUS, so far as examinations after death may be depended upon, is almost always accompanied with effusion into the ventricles of the brain; on which account indeed the name of HYDROCEPHALUS has been applied to it, though most incorrectly; for I cannot but agree with Dr. Porter, that it has no other symptom in common with chronic or idiopathic HYDROPS CEREBRI, and that such a generalization has been a cause not only of much confusion in nosology, but of much mischief in practice: and hence Dr. Coindet proposes, while he retains HYDROCEPHALUS for the latter, as already observed, to distinguish the former by the name of HYDRENCEPHALUS.

Sometimes found in adults, but mostly in infants.

This disease is sometimes found in adults, but mostly in young subjects, and chiefly from early infancy to seven years of age, particularly in those of a fair complexion. After seven years, the disease is comparatively rare.

[Dr. Mills, in his very interesting essay*, has recorded the cases and dissections of twenty patients, who fell victims to acute hydrocephalus. Of these, twelve died before they attained the age of six; seven between their sixth and eighth year; and one at the age of twelve.]

Diagnostics.

The symptoms commence obscurely, and are those of irritation produced by worms: as irregularity, and especially costiveness in the bowels; listlessness; impatience; knitting the brows into a frown; heaviness of the head, which organ the patient is always desirous of reposing in a chair or some other place; irregular fever; and, occasionally, violent and deep-seated pain in the sensory shooting from temple to temple, or across the forehead; frequently accompanied with sickness. Sprightliness, vivacity, and good-temper sink into dulness; the brightness of the eye becomes dim, and the colour of the cheek vanishes, the child walks unfirmly, as though stepping over a threshold, and often staggers as if drunk†. The pulse is irregularly

* Trans. of the Association of the King's and Queen's College of Physicians, vol. v. p. 434. Dublin, 1828.

† Gölis, ut suprà.

quick; the sleep unquiet, and interrupted by screams; and the eye has a look peculiarly oblique or squinting. These three last symptoms are usually regarded as pathognomonic. The eye, however, instead of taking an oblique direction, is sometimes turned upwards: but either change is the result of spasmodic action; the pupil is often at first contracted, but at length unalterably dilated *. The pyrectic symptoms appear chiefly in the evening; but sometimes at other periods; for, in this respect, there is a strange and unaccountable anomaly; and as the disease advances they increase. The head is hot to the hand though without any flush; a severe pain is felt in the forehead, sometimes shooting back to the nape of the neck, or alternating with pains in the limbs, or with colicky gripings, and the stimulus of light becomes highly painful. Shortly after which, many of the symptoms are apt to assume deceitfully for a few hours, perhaps a day or two, a milder character; but the pulse evinces less power, the limbs become emaciated, stupor supervenes, occasional convulsions, more or less general, follow, and death very speedily closes the scene.

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So imposing is the apparent improvement at times, that Dr. Gölis candidly tells us, in two instances he dropped his unfavourable prognosis, and thought the little patients on the point of recovery. But a relapse after thirty-six hours in the one, and forty-eight hours in the other, took place, and was speedily followed by death †.

Deceptive appearance of improvement.

I have thus given a brief sketch of the symptoms, that principally mark the progress of this disease in all their versatility; and it is this versatility that has produced the chief differences of opinion, entertained concerning it.

The first symptoms are unquestionably rather those of irritation, than of compression, as is obvious from their resemblance to those of invermination. The venous system in children, indeed, and especially the veins of the head, are not disposed to plethora, which is rather a characteristic feature of advanced years; nor does the small quantity of water, which is often found in the ventricles, seem adequate to the violence of the effect; and we have hence very strong grounds for supposing, that the collection of water

The first symptoms inflammatory,

* Cheyne, Essay on Hydrocephalus.

† Praktische Abhandlungen, &c. ut suprà.

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and those of oppression only secondary.

Examination of the opposite opinion.

is only a secondary disease, dependent upon some previous idiopathic affection in some part of the brain; and that affection, as Dr. Rush has long ago very ably shown, an inflammation. It has indeed been observed, in opposition to this opinion, that acute hydrocephalus is less frequently to be met with in strong and vigorous, than in weak and sickly children, dropsy being here, as in other species, far more commonly an effect of debility; whilst it is in strong and vigorous children alone that we have reason to expect inflammatory action in the brain, as in any other organ. Bleeding it is admitted has been serviceable at times; but we are told, that it has often been unproductive of any benefit whatever; and that it is possible to account for its occasional utility by other means than its taking off inflammatory action, as by simple removal or diminution of venous congestion. Yet we have already observed, that venous congestion is not commonly a disease of infancy, but of later life; that the first symptoms are those of irritation; that post-obit examinations have very generally shown an inflamed state of the arteries; and that the fluid accumulated is not sufficient in many instances of itself to account for the symptoms, by which the disease is characterized.

[Many facts on record exhibit a large quantity of fluid in the brain, without any alarming symptom having resulted from it. Morgagni found eight ounces in a man, who died suddenly of suffocation in an advanced stage of pneumonia; and Dr. Heberden found the same quantity in a man who sunk rapidly, after having been weakened by a febrile attack, without any symptom of an affection of the brain. It is, therefore, as Dr. Abercrombie justly remarks, not the mere presence of a certain quantity of fluid in the brain, that gives rise to the symptoms of hydrocephalus; all of which, on the other hand, have been known to occur, and terminate fatally, without any effusion. The conclusion, deduced from these facts by Dr. Abercrombie, is, that the prominent symptoms in these cases are not the result of effusion, but of that disease of the brain, of which the effusion is one of the terminations*.]

Prominent symptoms not the result of effusion.

* See Abercrombie's Pathological and Practical Remarks on Diseases of the Brain. p. 147.

In the progress of the complaint, there is often a very singular irregularity in the quickness of the pulse, which seems to be always varying and untrue to itself; insomuch that if we count it several times in succession, we may chance to find it now eighty strokes, now a hundred, now a hundred and twenty or thirty strokes, and immediately afterwards not more than eighty or ninety in a minute.

Singular irregularity of the pulse.

[Some physicians are much more confident than others, of being always able to detect the existence of the disease. The most characteristic symptoms of its first stage, as pointed out by Dr. Mills, are a peculiar expression of countenance, indicative of oppression, pain, and despondency; frequent sighing; a disposition to retirement; a heat, weight, pain, or heaviness of the head, or all these combined; intolerance of light; waywardness and fretfulness; a low irregular fever; frequent nausea or retching; an irregular state of the appetite and bowels; and the continuance of the disease, notwithstanding the employment of aperient medicines.

Symptoms in first stage.

The diagnosis of the second stage, Dr. Mills considers less difficult. The heavy sigh, the deep moan, the wild scream, the preternatural dilatation or contraction of the pupils, imperfect or lost vision, delirium, difficult deglutition, paralysis of one hand, arm, or leg, of the eyelids, and of the sphincters; the head and neck permanently bent back; a slow intermitting, or a rapid pulse; frequent vomiting and convulsions, are symptoms, which Dr. Mills represents as characteristic of the stage of effusion*.

Second stage.

On the other hand, Dr. Abercrombie does not recognise any certainty in the diagnosis, and has published various facts, which tend to prove, that none of the symptoms can be depended upon as a certain indication of effusion. Slowness of the pulse followed by frequency, squinting, double vision, dilated pupil, paralytic symptoms, and perfect coma, he says, have been noticed without any effusion. He further shows, that all these symptoms may exist in connexion with a state of the brain, which is simply inflammatory †.]

No symptoms a certain indication of effusion.

The duration of the disease is equally uncertain; com-

Duration of the disease.

* Trans. of Association, &c. of King's and Queen's College of Physicians, vol. v. p. 447.

† On Diseases of the Brain, p. 148.

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monly, perhaps, it runs on from three to six weeks, before it proves fatal; but it will sometimes destroy life in a fortnight, or even a week. Dr. Coindet has occasionally known the patient sink in two or three days *. [According to Dr. Mills, acute hydrocephalus, which is the most frequent, commonly lasts from seven to twenty-eight days; chronic, from one to six months; though occasionally protracted to one, two, three, or even sixteen years †.

Seat of the effusion.

According to Dr. Abercrombie's researches ‡, the seat of effusion varies in different cases. It is found in the ventricles, under the arachnoid, betwixt the arachnoid and dura mater; and there is every reason to believe, that it also takes place betwixt the dura mater and the bone, though the fluid, effused in this situation, escapes when the head is opened. It is occasionally met with in the cavity between the layers of the septum lucidum. Cases are recorded, in which the effusion was confined to one of the lateral ventricles; a state, which Dr. Abercrombie has never seen, and which must have depended upon an obliteration of the communication between the two ventricles. Nosologists divide hydrocephalus into internal and external, according as the fluid is contained in the ventricles or between the brain and its membranes. This distinction is generally adopted: its correctness, however, is doubted by Dr. Duncan, jun. In many cases of chronic internal hydrocephalus, the ventricles, he observes, are so much distended, and the parietes so much thinned, that the head becomes translucent as a hydrocele, and the hemispheres form a mere membranous bag, which is generally ruptured in opening the head. The water is then supposed to lie in direct contact with the membranes, and between them and the brain; the remaining parts of the basis of which are supposed to be the whole brain compressed by the water external to it, while the thinned upper portions of the hemispheres are altogether overlooked, or supposed to be an exudation of coagulable lymph §. That such mistakes may have happened seems, indeed, highly probable,

Reality of external dropsy of the head doubted.

* Mémoire sur l'Hydrencéphale, &c. ut suprà. Geneva, 1818.

† Trans. of Assoc. of King's and Queen's College, &c. vol. v. p. 433.

‡ On the Diseases of the Brain, p. 21.

§ Edin. Med. Chir. Trans. vol. i. p. 221.

though authorities are so numerous and weighty in support of the reality of external hydrocephalus, that its existence can hardly be disputed.] Gen. VII. Spec. I. β E. Cephalitis profunda.

We have already observed, that the substance of the brain has more generally evinced proofs of inflammation and other mischief, than the membranes; though not unfrequently the increased vascularity and turgescence have extended from the parenchyma to the surface. As the existence of effused fluid is not necessary to the disease, it varies considerably in quantity when it is found, from a few drachms to eight or ten ounces or more; as a mean measure, however, it may be stated at five or six ounces. Most modern pathologists concur with Malpighi and Haller, in holding, that it is incoagulable; but Pechlin, Lapeyronie, and a few authorities of the present day, have denied this. [Dr. Abercrombie describes it as sometimes limpid, sometimes bloody, and sometimes turbid, containing shreds of flaky matter. In certain cases, it is seen in the ventricles, exhibiting all the sensible qualities of pus. Generally, however, it seems to contain but a very small proportion of animal matter; and, in Dr. Marcet's experiments, a thousand grains yielded less than two grains of animal matter. In other cases, however, it is coagulable.] Amount of fluid effused. Quality of the fluid.

The disease is often connected with a scrofulous habit, and has sometimes formed a fatal metastasis to phthisis. [From the investigations of Dr. Mills, it appears, that the disease often attacks the healthy children of healthy parents; but occurs more frequently in the puny, or scrofulous, or in children, whose parents are scrofulous, debilitated, or worn out by intemperance. There were appearances of scrofula in twenty-two of the patients examined by him. In two, the brain was scrofulous; in three, the lungs; in four, the liver; in eight, the mesenteric glands; in four, the spleen; and in five, the cervical glands. Of the patients, who recovered, six had no visible marks of scrofula, and the parents of twenty-six seemed also free from it*.] Sometimes connected with a scrofulous habit.

The mode of practice, in consequence of the above discrepancy of opinion, has been extremely undecided: whilst many practitioners are so despondent as to fear, that every plan is equally unavailing. It has fallen to the author's lot, Therapia.

* Trans. of Assoc. of King's and Queen's Coll. of Physicians, vol. v. p. 434.

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however, to see several patients recover both in infancy and verging towards adult age, who had all the characteristics of the disease, and were unquestionably labouring under it.

Prognosis.

[This is a point, on which the sentiments of Dr. Abercrombie differ from those of the author of the present work. The former admits, that many cases have recovered, which exhibited all the usual symptoms of hydrocephalus. Yet, if certain principles, which he has endeavoured to establish, be correct, and which have been already noticed in the foregoing pages, there is no certain test of effusion in the brain; and all the symptoms usually attending it exist in connexion with an inflammatory condition of the brain; which, if allowed to go on, would probably lead to effusion, but which, if treated with decision in its early stage, may be treated with success. Whether the fluid can be absorbed, or the disease cured after effusion, must remain a conjecture; but, from the facts that Dr. Abercrombie has adduced, he inclines to the belief, that, in ordinary cases, the removal of the fluid, if it were to take place, would be no improvement of the patient, because there would still remain the deep-seated disease of the central parts of the brain, which accompanies the effusion in a large proportion of cases, and which, we have seen, may be fatal, without any effusion, yet with all the usual symptoms of hydrocephalus. It is a valuable observation, made by Dr. Abercrombie*, that the ground of prognosis, in particular cases depends, perhaps, in a great measure upon the activity of the symptoms. The more they approach the character of active inflammation, the greater the prospect of cutting them short; and the more they partake of the characters of low scrofulous inflammation, the less it will be. In every instance, the period for active practice is short, the irremediable mischief being probably done at an early period of the disease.]

Treatment generally accordant with that for the preceding variety.

Contemplating it as a variety of cephalitis, the author has uniformly pursued the general plan recommended under the preceding variety, and to this practice he can only ascribe whatever degree of success he has been fortunate enough to meet with.

* On Diseases of the Brain, p. 149.

Blood should be drawn freely from the nape of the neck by cupping or leeches: the head should be shaven, and napkins dipped in ice-water, or vinegar and water, be applied to the posterior part of it, and be changed every hour or half hour. The bowels should be freely purged with calomel, or calomel and jalap*: and the jalap should be toasted to render it less disposed to excite sickness: an easy diapnoë should, if possible, be excited and maintained on the skin; the chamber should be large and well ventilated: and whenever it may be right to stimulate the head, epithems of neutralized ammonia should be preferred to blistering. The value of digitalis is doubtful; when used early it has seemed serviceable, but it should be avoided in the second stage of the disease; unless, indeed, it be employed as, by Dr. Gölis, to smooth the passage to death, by diminishing the violence of the convulsions that usually precede it. In later life than infancy, where it has been necessary to draw blood repeatedly, I have occasionally prescribed opening the temporal artery with great success: for a small quantity, as six or eight ounces of blood, drawn in this way, will often answer the purpose of double or treble the quantity abstracted from the arm. In a young lady of nineteen, labouring under very prominent symptoms of this disease, I found the violent and deep-seated pain in the head cease instantly; and the pulse sink from seventy to forty-four, as soon as only a tea-cup full of blood was taken away in this manner.

Gen. VII. Spec. I. β E. Cephalitis profunda.

Temporal artery sometimes opened with great success.

Mercury employed both externally and internally, in a quantity sufficient to excite a ptyalism, has also been used in many instances with great success, both among adults and infants, but particularly among the latter. Dr. Percival gives the history of a child of his own, aged three years and a quarter, in which a perfect cure was obtained by this and nothing else. In forty-eight hours signs of amendment appeared, and in six days the child was well; during which time thirteen grains of calomel had been taken, and seven scruples of strong mercurial ointment had been rubbed into the legs†. Dr. Dobson of Liverpool em-

Mercury externally and internally in large doses.

* Statement of the early symptoms which lead to the disease termed Water on the Brain. By G. D. Yeats, M.D. 8vo. 1823.

† Edin. Med. Com. vol. vi. p. 224.

GEN. VII. SPEC. I. β E. Cephalitis profunda.

ployed quick-silver in the same double plan, and asserts, that he found it equally useful, and most strikingly so in the following case. Four children of the same family had evinced this disorder in succession; three had fallen victims to it under a different treatment: one between three and four years old, was subjected to the mercurial plan of calomel and inunction. In forty-eight hours a ptyalism was excited, the symptoms abated, and the child recovered*. Dr. Gölis prefers the internal to the external use of mercury, as far more active and to be depended upon. He gives it in free doses, and observes, "that an infant of a year old and under will bear a much larger proportion without diarrhœa or griping, than those of four, five, six, or even eight years of age." And hence to the former he often prescribes eight or ten grains in the course of twenty-four hours. If diarrhœa or griping be produced, it should be remitted. With Gölis, ptyalism has proved a rare effect†.

In adults, the ordinary proportion is ten grains of calomel, and a drachm of strong mercurial ointment, every night. Under this treatment, various cases of success are recorded in the Edinburgh Medical Journal.

[After depletion, Dr. Mills exhibits calomel with opium, but, at first, in small doses; and recommends blisters, or the antimonial ointment, to be applied to the head, or its vicinity. He has also given nauseating doses of tartar emetic with decided benefit‡.]

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* Edin. Med. Com. vol. vi. p. 224. † Gölis, ut suprà.

‡ Mills, in Trans. of Association of King's and Queen's College of Physicians, vol. v. p. 450, &c.

## SPECIES II.

## EMPRESMA OTITIS.

### *EAR-ACHE. IMPOSTEME IN THE HEAD.*

SEVERE PAIN IN THE EAR; TENDERNESS UPON PRESSURE; DEAFNESS OR CONFUSION OF SOUNDS.

Gen. VII. Spec. II. Causes.

THIS is usually a distressing rather than a dangerous disease; but the fever is sometimes violent, and delirium and even death has been a consequence. It is often produced by cold, and is hence frequently a local catarrh: and is still more commonly, perhaps, occasioned by some exotic substance which has accidentally entered into the ear, as a small piece of ragged bone*, a cherry-stone†, a worm, an insect, or the larva of an insect, as of an ant, a fly, or a cricket; of all which we have a variety of curious histories in medical journals‡. In these instances, the disease is confined to the external ear: but, from many of the ordinary sources of inflammation, it often exists within the tympanal cavity; whence, too, the inflammatory action has extended to the brain, or affected it by sympathy§. In this case the membranes and lining of the inner organ are coated with coagulable lymph, pus, or both; while even the temporal bone of the affected side has become carious. An instance of this last kind is related by Dr. Powell. The patient was a young gentleman of sixteen, who had been attacked with otitis once or twice before. The pain was intense, but the pulse never exceeded seventy-two: yet the disease proved fatal. The intellect was at no time disturbed‖.

In these cases inflammation in the external ear: but sometimes internal, and extends to the brain.

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* Hagendorn, cent. i. obs. 64. † Fabric. Hildan. cent. iii. obs. 4.

‡ Stalpart Van der Wiel. Maget. Journ. de Med. tom. lxiv. Mochring, Obs. 21. Samml. Medicinischen Wahrnehmungen, b. viii. p. 37.

§ Case of Inflammation and Abscess of the Brain, attended with Disease of the Ear. By John O'Brien, M.D. Trans. King's and Queen's Coll. Dublin. vol. ii. p. 309. 8vo. 1824. Parkinson, in London Med. Repository, March, 1817.

‖ Med. Trans. vol. v. art. xvi. p. 212. The frequent connexion of inflamma-

GEN. VII. SPEC. II. Empresma otitis.

The disease, therefore, offers two distinct modifications, and is so far correctly arranged by M. Itard.

| | |
|---|---|
| α Externa. External Imposteme. | External ear highly irritable, lining membrane, when examined by a bright light, red and tumid. |
| β Interna. Internal Imposteme. | Hemicrania, sense of weight in the head: roughness about the mouth of the Eustachian tube: tonsils often enlarged. |

A hissing or tingling sound accompanies both varieties; but is most painful in the latter. M. Itard * believes both to proceed chiefly from cold, and to possess much of the nature of a catarrh: but in dividing them into two distinct sub-species, a catarrhal and purulent, he ramifies very unnecessarily; for, let the exciting cause be what it may, the purulent is only a subsequent state to the preceding.

α E. Otitis externa.

The EXTERNAL OTITIS generally suppurates in a short and then more completely forms what is vulgarly called an IMPOSTEME or IMPOSTHUME in the head, a term corrupted from *aposteme;* the discharge, which is usually yellowish, puriform, fetid, and somewhat bloody, flows from the external auditory passage in a greater or less abundance, according to the extent of the inflammation. It commonly diminishes in about a fortnight or three weeks; when the fluid becomes thicker, and to the eye, and even the smell, caseous. It then ceases, and is succeeded by a copious ceruminous secretion, which passes off without any injury to the sense of hearing.

Sometimes becomes chronic,

This is the ordinary course; but it sometimes runs into a chronic state, and especially where there is a morbid diathesis from struma, syphilis, or variola; and, under such circumstances, it becomes often tedious and unmanageable, and is accompanied with a thickening of the tympanal mem-

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tion of the dura mater with affections of the ear, and of the petrous portion of the temporal bone, has been of late admirably illustrated by Dr. Abercrombie. See his Pathological and Practical Researches on Diseases of the Brain, p. 32, &c. 8vo. Edinb. 1828.—EDITOR.

* Traité des Maladies de l'Oreille et de l'Audition. Par J. M. G. Itard, M.D. &c. 2 tom. Paris, 1821.

brane, and an obtuseness of hearing. In some cases, however, the *otorrhœa* or chronic state takes the lead. This is mostly the effect of cold, and is in fact an otitic catarrh. The discharge from the ear, is at first, perhaps, not attended to, and, from particular circumstances, occasionally ceases for a time; but only to show itself in any incidental excitement with renewed violence. The discharge differs in different individuals in its consistence, colour, and the peculiarity of its smell, though the last is always offensive; it is at first mucous, then purulent, and at length consists of a thin sanies; in which last case, connected with the specific fetor that issues from a carious bone, there can be little difficulty in determining that some of the small bones of the ear or even the temporal bone itself is affected; which, indeed, are at times thrown out in minute fragments. M. Lallemand, who has ably treated upon this subject, observes that "the morbid secretion is apt to alternate with attacks of rheumatism in other organs, catarrhous vesicæ, leucorrhœa, and various other complaints*. The most dangerous metastasis is that to the membranes or substance of the brain; which M. Lallemand conceives occasionally produces death so soon, that no trace of such a transfer is to be ascertained on dissection.

GEN. VII. SPEC. II. α E. Otitis externa. and is called otorrhœa.

The general remedies for inflammation are here to be resorted to; and particularly warm, narcotic fomentations, and a dry atmosphere. Blisters behind the ears have often afforded relief; and for the same reason stimulant errhines and sialagogues: which, by evacuating the mucous follicles of the Schneiderian membrane, and the salivary glands, produce an influence on all the neighbouring parts, and often on the whole of the vessels of the head. And hence head-aches, ophthalmies, and pains in the ear, are in many instances equally relieved by these applications, and were often employed by Dr. Cullen for this purpose†. Where the case is chronic, setons or some other protracted drain should never be neglected.

Treatment.

When worms or larvæ of insects are the irritating cause,

* Recherches Anatomico-pathologiques sur l'Encéphale et ses Dependances. Lettre quatrième. 8vo. Paris, 1823.

† Mat. Med. vol. ii. p. 436—442.

GEN. VII. SPEC. II. β E. Otitis interna.

a few drops of oil of almonds introduced into the ear will readily suffocate them.

The INTERNAL OTITIS inflammation or imposteme of the tympanal cavity, may commence either in the lining membrane, or in the membranes which cover and connect the minute bones, or even in the mastoid cells; it is soon, however, apt to spread from its primary seat to every adjoining part so as to implicate every division or recess of the cavity of the tympanum: and unless the inflammatory action is soon mastered, suppuration must necessarily ensue, and it rarely happens that the tympanal bones are not involved in this severer process. In some cases in which their articulations or other connecting mediums are destroyed, they drop away as soon as the tympanal membrane becomes so far ulcerated as to allow them a passage. Occasionally however a kind of adhesive inflammation, either between the articulating membranes, or the bones where the former are destroyed, may effect an anchylosis, and render them quite immoveable.

How far the organ of hearing is hereby destroyed.

How far, under these circumstances, the organ of hearing may be destroyed must depend upon the extent of the disease, and the parts that have been actually involved in it. If that portion of the organization which merely assists in conveying the sound has been alone affected, the hearing will not necessarily or altogether be destroyed; and hence the malleus and incus, or two outer bones, are sometimes lost, while the sense of hearing is still preserved in a sufficient degree of perfection for ordinary purposes; the sonorous vibrations being afterwards conveyed through the tympanum, as usual, along its parietes to the stapes, and by the vestibular fenestra to the labyrinth. But if these last have participated in the ulcerative process, and especially if the stapes be detached with the other bones, the vestibule laid open, the sac eroded, and the water which it contains have escaped, the destruction has extended to the sentient as well as to the conveying part of the general organ, and the loss of hearing will be irreparable on the side on which the mischief has occurred *.

* Edin. Med. and Surg. Journ. No. 74, p. 92.

## SPECIES III.

## EMPRESMA PAROTITIS.

### *MUMPS.*

PAINFUL UNSUPPURATIVE TUMOUR OF THE PAROTID GLANDS, OFTEN EXTENDING TO THE MAXILLARY: CONSPICUOUS EXTERNALLY; FREQUENTLY ACCOMPANIED WITH SWELLING OF THE TESTES IN MALES, AND OF THE BREASTS IN FEMALES.

Gen. VII. Spec. III. How differs from parotid phlegmon.

THE parotid glands are subject to a troublesome, and sometimes a fatal phlegmon, which we have already noticed under the name of PHLEGMONE *parotidéa*. The inflammation before us is altogether of a different kind; it is more extensive, more painful, and rarely tends to suppuration. In our own country it is vernacularly called MUMPS, and in Scotland BRANKS.

Description.

The tumour, though sometimes confined to one side of the neck, more usually appears on both: it is at first moveable, but soon becomes diffused to a considerable extent. It increases till the fourth day, and often involves the maxillary glands in the inflammation; is evidently contagious, and often epidemic. After the fourth day it gradually declines; and for the most part there is but little pyrexy, or need for medical aid; avoiding cold, and a brisk purgative or two being all that is called for. The sympathetic action of the testes and the mammæ is most conspicuous towards the decline of the inflammation. And, in many instances, it is by no means an unfavourable sign; for it has been occasionally found, that where the sympathy has not been manifested, or the glandular swelling has been suddenly repelled, the symptomatic fever has been greatly exacerbated, delirium has ensued, and even death has closed the scene. Where there is any danger of such a result, the swelling should if possible be brought back, or sustained by stimulant cataplasms or blisters. Dr. Hamilton has in several cases observed this sympathetic influence operating alternately; and mentions more than one instance,

Sympathy of the testes and mammæ, by no means unfavourable;

Sometimes alternant.

GEN. VII. SPEC. III. Empresma parotitis.

in which after a very considerable enlargement of the testicle, upon the cessation of the disease, this organ entirely wasted away, insomuch that the tunica vaginalis became an empty bag*.

Malignant parotid.

In advanced life, parotitis is sometimes apt to run into a chronic form, accompanied with very mischievous symptoms; in which state it is denominated a malignant parotid. This is more especially apt to take place in females when menstruation is on the point of ceasing, and the general action of the system labours under some disturbance. The tumour should, if possible, be dispersed by leeches and cooling repellents: for if it proceed to suppuration, to which it tends, though very slowly, the ulcer rarely heals; usually degenerating into a foul offensive sore, that sinks deeper and spreads wider, resisting all medical treatment, and at length undermines the constitution, and destroys the patient. Vomits frequently repeated have in this case been found highly serviceable; and those of the antimonial preparations are to be preferred to ipecacuan. They maintain a longer action, and determine more effectually to the surface, or rather to the excernents generally

How to be treated.

Iodine sometimes useful.

[Dr. Neumann, of Neustadtel in Silesia, has employed the hydriodate of potass with great success as an external application in empresma parotitis, which prevailed epidemically in that town in June 1823. Among the poor classes, who were treated in the ordinary way, the disease was very tedious, and generally ended in suppuration. Among the higher ranks, the treatment consisted in the exhibition of an emetic, and covering the tumour with a plaster, composed of eight parts of mercurial ointment, and one part of the hydriodate of potass; and the common result was a complete cure in three or four days. In the cases so treated Dr. Neumann never observed any metastasis to other organs, and he is disposed to impute this to an erythematic redness, which always appeared on the first or second day, and remained from eight to twelve days†.] In a case, in which a diseased condition of the parotid gland formed only part of an enormous tumour in a patient aged

* Edin. Trans. 1773.

† See Rust's Mag. für die Gesammte Heilkunde: 1826; and Edin. Med. Journ. No. 93, p. 452.

forty, Mr. Carmichael removed the whole by the knife, and the patient recovered, with a slight partial paralysis of one of the muscles on the affected side*. [The parotid gland, when affected with cancer or sarcoma, has also been successfully removed by Beclard, Lisfranc, Professor Naegele of Heidelberg, and others. When, however, the whole of the gland is diseased, its deep extension at the base of the skull makes the removal of a portion of it almost, if not quite, impracticable. In one example, in which the disease created a serious impediment to deglutition, and had made such progress, that the effectual removal of the whole of it seemed impossible, Dr. Fricke of Hamburgh tied the carotid artery. The result was a partial diminution of the tumour, and an improvement in the power of swallowing; but abscesses afterwards formed in the swelling, and the patient fell a victim to the constitutional disturbance.] GEN. VII. SPEC. III. Empresma parotidis.

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## SPECIES IV.

## EMPRESMA PARISTHMITIS.

### *QUINSY.*

REDNESS AND SWELLING OF THE FAUCES; WITH PAINFUL AND IMPEDED DEGLUTITION.

THIS is the squinsy, or squinancy, of our old writers; the cynanche, or angina of medical books. Paristhmia, from παρὰ and ἰσθμὸς, literally *morbus faucium*, or *throat-affection*, is the term employed by Hippocrates, and is only varied to paristhmitis, in the present system, in consonance with the general termination of all the species belonging to the genus before us. The term was used among the Greeks, as on the present occasion, in a specific sense: GEN. VII. SPEC. IV. Synonyma.

* Trans. of the King and Queen's College, Dublin, vol. ii. p. 101. 8vo. 1824.

GEN. VII. SPEC. IV. Empresma Paristhmitis.

though the later Greek physicians gave different names to its different varieties: and hence we meet with cynanche, synanche, and parasynanche; the common signification of all which is *angina* or strangulation, while the prefixes cy- sy- and parasy- are of doubtful meaning, as I have farther observed in the preliminary dissertation to the Nosology. Aëtius attempted to justify *cynanche*, but Cœlius Aurelianus, and Paulus, used *synanche*, after Celsus. The Latins employed angina in the same extent as Hippocrates did Paristhmia; quinsy is used in a parallel latitude among ourselves. Sauvages conjectures, and there is some ground for the opinion, that the synanche of the Greeks was the *common* quinsy of the present day, the *paristhmitis tonsillaris* of the system before us; their parasynanche, the quinsy of the pharynx, *paristhmitis pharyngea;* and their cynanche, croup, or *empresma bronchlemmitis*.

Quinsy presents itself to us under four varieties: the common inflammatory sore-throat; the ulcerated or malignant; the sore throat that peculiarly attacks the pharynx; and inflammation of the esophagus.

| | |
|---|---|
| α Tonsillaris. Common quinsy. Inflammatory sore throat. | Swelling of the mucous membrane of the fauces, and especially of the tonsils; redness florid; fever a cauma. |
| β Maligna. Ulcerated; or Malignant sore throat. | Redness crimson; with ulcerations covered with mucous and spreading sloughs, of an ash or whitish hue: fever a typhus. Frequently epidemic; generally contagious. Found often as a symptom in rosalia, or scarlet fever. |
| γ Pharyngéa. Pharyngic quinsy. | Redness florid, and especially at the lower part of the fauces: deglutition extremely painful and difficult: fever a cauma. |
| δ Œsophagi. Quinsy of the esophagus. | The impediment to deglutition felt below the pharynx, with a circumscribed pain, and |

rejection of food when it reaches the seat of obstruction. GEN. VII. SPEC. IV.

In the FIRST VARIETY OR COMMON QUINSY, the swallowing, is for the most part, greatly impeded; and the speech, and sometimes even the respiration, rendered highly troublesome; the mucus is excreted sparingly, and consequently there is a considerable clamminess in the mouth; and the pain sometimes spreads to the ears. The disease is never contagious, and though violent while it lasts, is comparatively of short duration. It terminates by resolution, or suppuration; hardly ever by gangrene; though a few sloughy spots sometimes appear upon the fauces. α E. Paristhmitis tonsillaris. General character.

The usual cause is cold; and it is hence found most frequently in spring and autumn, when vicissitudes of heat and cold are most common. It is supposed to affect particularly the young and the sanguine: but, in my own practice, it has occurred as often at other ages and in other temperaments. When it has been re-produced several times within short intervals of each other, it is apt to establish a peculiar diathesis or habit, so as to be excited readily and by very slight occasional causes. Causes.

If attacked by a medical process early, much benefit has been derived from astringent and acid gargles, and vapours inhaled by any simple machine for this purpose. Blisters to the throat, or behind the ear, ought also to form a part of the curative plan; and if bleeding be had recourse to, it should be by scarification, or leeches applied to the tonsils or fauces. An early use of leeches I have often found highly successful, and can distinctly corroborate Dr. Crampton's remark, that leeches fix far more readily on moist internal surfaces than on the skin. Dr. Crampton, by way of caution, passes a thread of silk through the lower half of the body of the leech *, but I have never found this necessary. Cooling purgatives, and a low regimen should also enter into the general plan of treatment. If suppuration cannot hereby be prevented, the Treatment.

* Dublin Hospital Reports, vol. iii. p. 229.

GEN. VII. SPEC. IV. α E. Paristhmitis tonsillaris.

better way will be to expedite this termination by the steam of warm water, or water impregnated with the leaves of rosemary or chamomile; and where the fluctuation is clear to the touch, if the abscess do not of its own accord break readily, it ought by all means to be opened with the lancet.

Process in case of suppuration.

Singular terminations.

In a few instances the suppuration has pointed and broken externally, and the termination has been favourable *. And occasionally, from the extent and violence of the inflammation, there has been so much danger of suffocation, that it has been found necessary to make an opening into the trachea †: which has been done sometimes as high as the larynx, and sometimes considerably lower; and, under both kinds of operation, the patient has recovered ‡.

β E. Paristhmitis maligna.

In the MALIGNANT or SECOND VARIETY, the inflammation passes at once into the ulcerative stage; and is consequently characterized by the symptoms stated in the definition: the sloughing often takes place rapidly, and spreads widely, and the fever is a typhus. This variety is frequently epidemic; generally contagious; and found often as an alarming symptom in rosalia, or scarlet fever. In its idiopathic form it is usually ushered in with a sense of stiffness in the neck, accompanied with some hoarseness of the voice, and occasionally with symptoms of a coryza. It is in effect a quinsy, taking an erythematic or erysipelatous, instead of a phlegmonous turn, in consequence of the peculiar temperament of the atmosphere, or of the patient, or of some unknown cause.

Frequently epidemic.

Description.

Explanation.

Extensive range of the ulceration.

The sloughs at first appear whitish, or cinereous; but soon become brown, and often black; and spread over the whole of the fauces, and mouth, into the nostrils, and often down the esophagus; the ulceration has, also, sometimes passed up the Eustachian tubes, and affected the ears. And, as the sloughs appear to carry contagion with them, on being swallowed they have communicated the disease through the entire range of the alimentary canal.

Hence often highly dangerous.

The danger is hence very great if the ulceration cannot be checked; and it is peculiarly so to children and adults

* Schenck, Lib. ii. Obs. 36.

† Ballonius, i. p. 182.. Fernire, Journ. de Méd. tom. 62.

‡ Fienus, Chir. Tract. iv. v. c. 1. Musgrave, Phil. Trans. No. 258.

of relaxed and delicate frames. The disease makes its appearance most commonly in the autumn, though it has appeared in every season. Gen. VII. Spec. IV. β E. Paristhmitis maligna.

The erythematic character is sometimes very striking, the intumescence spreading widely, yet limiting itself to the cellular tissue. Even externally the throat is swollen, hard, and tender; while such is the constriction within, that deglutition is impossible, and there is great danger of suffocation. Dr. G. Gregory has given a well-marked instance of this modification, in a young woman in whom it terminated fatally on the sixth day: and has referred to other cases of a similar kind, and mostly with a similar result, from Dr. Kirkland, Dr. Wells, and Mr. James. From its being chiefly seated in the cellular membrane, Dr. Gregory has given it the name of *cynanche cellularis**. Erythematic character sometimes very striking. Cynanche cellularis of Gregory.

Dr. Cullen regards the eruption of scarlet fever as a pathognomonic symptom of this disease; but this is to confound two complaints that are very clearly distinct, as we shall have farther occasion to observe, when discussing rosalia, or scarlet fever. It is at present sufficient to remark that, even in the opinion of Dr. Cullen himself, quinsy is not essential to scarlet fever, or, in other words, does not always accompany it; and that, on the other hand, a scarlet eruption is not essential to the malignant quinsy, or does not always accompany it, though he contends that it does almost always†. Whether scarlet fever is a pathognomonic symptom. Does not always accompany it.

The malignant or ulcerated sore throat may be without a scarlet eruption, or with it: if the former, it is an idiopathic affection, and constitutes a variety of paristhmitis or cynanche. If the latter, it is a symptomatic affection, and constitutes a variety of rosalia or scarlatina. Both may exist separately.

Cleanliness, pure air, and a free ventilation, are here of the utmost importance: and as the contagion is often very active, the nurses should be cautious to remove speedily the sloughs and foul mucus that are washed or wiped from the mouth. General regimen:

The general treatment will necessarily be the same as that we have already pointed out for typhus. Emetics are and treatment. Emetics.

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* Med. and Phys. Journ. vol. xlviii. p. 287.

† Pract. of Phys. Part. I. Book III Ch. IV. Sect. DCLI.

GEN. VII. SPEC. IV. β E. Par-isthmitis maligna.

often employed with great advantage at the commencement of the complaint; and the bowels should be gently opened, but not irritated with drastic purges.

Leeches.

Here, also, as a mean of abstracting blood locally, leeches have been often found of peculiar advantage when timely applied*; and the throat should be soon afterwards gargled

Port wine.

with port wine, made still more stimulant by spices or

Aromatics.

other aromatics: or with a strong decoction of bark,

Mineral acids.

rhatany, or catechu, very sharply acidulated with mineral acids, the aromatic or pungent Cayenne vinegar, or charged with an addition of Cayenne pepper in substance.

Astringents.

Gargles of the mineral, and even the metallic astringents, have also been tried, but in general they want poignancy. Lunar caustic, in the proportion of one part to a thousand parts of water, has sometimes been found useful†: as has the tincture of capsicum with infusion of roses, in the proportion of an ounce of the former to seven or eight ounces of the latter.

Stimulant gargles.

A strong decoction of mezereon root may, also, advantageously form the basis of a gargle; though even this will be improved by an addition of capsicum or Cayenne pepper‡, or the aromatic or mineral acids. The stimulus of mezereon is less acrid than that of Cayenne pepper, but it is more permanent, and acts more immediately on the fauces. [The editor is informed, that gargles, containing chlorurets of lime and soda, have been found particularly useful in the present disease.] In conjunction with these, camphor and ammonia has often been found beneficial when externally applied in the form of a liniment§. Both may be used internally; and the latter will be found, as Dr. Peart has well observed‖, one of the best stimulants we can employ, in doses of half a scruple of the sub-carbonate every

Bark and wine, in large doses.

three or four hours. Bark and wine should also be taken jointly, and in as large a quantity as the system will bear. Even sleep is less necessary than both these; nor should

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* See Dr. Crampton, on the Application of Leeches to Internal Surfaces. Dubl. Rep. vol. iii.

† Journ. de Méd. Nov. 1789.

‡ Collin. Med. Comment. ii. 27. Stephen, Med. Comment. Edin. v.

§ Rumsey, Lond. Med. Journ. x.

‖ Practical Information on the Malignant Sore Throat, &c.

the patient be suffered to rest for a period of three hours at a time, without fresh doses of both, though we wake him for the purpose. Time, indeed, is here every thing: if we make no progress in the first thirty-six hours, we may tremble for the event. Women, unaccustomed to wine, have taken it successfully under this disease in the proportion of two bottles a day, for more than a fortnight.

Gen. VII. Spec. IV. β E. Paristhmitis maligna.

Quinsy of the pharynx is, properly speaking, that which commences in this organ. It is met with but rarely; nor is it, when it does occur, a case of serious importance. It is distinguished by the florid redness of the inflammation, especially at the lower part of the fauces, and by the nature of the fever, which is a cauma. The pain, indeed, extends sometimes behind the sternum, but is only felt in swallowing. The breathing is not affected. A cure is easily induced by swallowing slowly nitrous and mucilaginous medicines, and taking off the phlogotic diathesis, where it prevails, by bleeding and brisk purgatives.

γ E. Paristhmitis pharyngea.

How distinguished.

Curative process.

Quinsy of the esophagus, the *cynanche œsophagitis* of Professor Frank*, is more deeply seated than the preceding, though the inflammatory blush often extends to the fauces. The food will in consequence pass forward to the seat of obstruction, but no further; and, by irritating the inflamed part, produces a painful effort to vomit, which continues till, by a severe struggle, which occasionally reaches to the back-bone, the ingulfed morsel is dislodged and thrown back into the mouth.

δ E. Œsophagi.

M. Bretonneau, in a recent work of great value, has given instances in which the inflammation before us, instead of leading to ulceration, shows a tendency to the production of concrete and membranous exfoliations, precisely like those of croup; into which disease it occasionally passes by an extension of the inflammatory action from the fauces or tonsils to the glottis. To this modification he has given the name of *angina diphtheritica*, or croupal sore-throat: and wherever it exists its treatment is to be that of this last disease†.

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* De Cur. Hom. Morb. Epit. tom ii. p. 104. 8vo. Mannh. 1792.

† Des Inflammations Spéciales du Tissu Muqueux, &c. par P. Bretonneau, &c. Paris, 8vo. 1826.

## SPECIES V.

## EMPRESMA LARYNGITIS.

### *INFLAMMATION OF THE LARYNX.*

PAIN ABOUT THE LARYNX; EPIGLOTTIS SWOLLEN AND ERECT; BREATHING SHRILL AND SUFFOCATIVE; GREAT ANXIEXTY; DEGLUTITION IMPEDED; FEVER A CAUMA.

GEN. VII. SPEC. V.

Whether ever described till of late. Probably known to Mead and Hippocrates.

IT is doubtful whether this severe and dangerous complaint has ever been described till of late years. It seems to have been known to Dr. Mead, whose general account coincides with a disease noticed by Hippocrates. It is minutely and accurately detailed by Dr. Home, in his Principia; and is the subject of several excellent papers in the Transactions of the Medico-Chirurgical Society, particularly by Dr. Farre, Sir Gilbert Blane, Dr. Roberts, and Dr. E. Percival. It is particularly and accurately described by Professor Frank *. The disease, as will be perceived by the definition, bears a considerable resemblance in many of its symptoms to croup; is highly acute, and destroys by suffocation in a day or two, unless very actively opposed. Frequently, indeed, it destroys much sooner. Brassavoli mentions a case that proved fatal in ten hours †; and Schenck another, in which suffocation and instant death were produced by a fit of vomiting, the spasmodic action having extended to the stomach or its auxiliary muscles ‡. Of three cases described by Dr. Baillie, each proved fatal; two of them on the third day, and one on the fourth. The patients had all been previously subject to inflammation of the throat, and were between forty and sixty years of age §.

Closely resembles croup.

It is produced by cold or the usual causes of quinsy, but has been often excited by too much exertion of the organ in singing, or public speaking.

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* Ut suprà, tom ii. p. 105.

† Comment. ad. Hippocr. de Rat. Vict. Acut. lib. iv.

‡ Obs. 29 ex Trincavellio, lib. ii.

§ Wardrop's edition of Baillie's Works, i. 54.

The disease makes its approach with the common symptoms of inflammatory fever, as chilliness succeeded by heat; the voice becomes hoarse and indistinct; the breathing laborious, with a painful sense of constriction in the throat; the fauces present a Modena-red colour, and are considerably swollen and turgid, the swelling extending to the face and eyes, the latter not unfrequently protruding, as in cases of strangling; though occasionally the inflammation is confined to the larynx and no peculiar appearance is to be traced on the tonsils, uvula, or velum palati*; the pulse is quick, and the tongue furred; and every attempt to swallow is accompanied with great distress; the muscles of deglutition, and even those of the chest, being thrown into severe spasms, threatening the patient with instant death from suffocation, and making him call out for air and an opening of the windows. GEN. VII. SPEC. V. Empresma laryngitis. Description.

It is distinguished from croup by the existence of a perpetual and voluntary hawking, rather than a forcible and involuntary cough, as though to clear the passage by expectoration. It is also distinguished from it by the nature of the expuition, which is a viscid mucus, rather than a coagulable and membrane-like exudation. The two diseases differ, moreover, in their proximate causes as considerably as in their symptoms. Laryngitis consists in a *suppurative* inflammation of the membranes of the larynx, extending backward to the membrane common to itself and the esophagus, between which pus is often found lodged: while croup or bronchlemmitis is a *peculiar* inflammation of the trachea, extending through the bronchial vessels, and exciting, on their internal surface, the secretion just noticed of a concrete filmy material, which threatens suffocation by filling up the opening of the rima glottidis. [How far this last statement agrees with the facts revealed by morbid anatomy, will be considered under the next species.] How distinguished from croup.

In the treatment of this distressing malady, our object should be to take off the inflammation by the most active means. For this purpose, eighteen ounces of blood should be instantly drawn from the arm, and eight or ten from the throat by leeches; and the bowels should be thoroughly Treatment.

* See Mr. Cockburn's Case, Edin. Med. and Surg. Journ. Apr. 1823.

GEN. VII. SPEC. IV. Empreuma laryngitis.

purged by calomel and jalap, or some other active cathartic. In connexion with this process, many writers advise the application of blisters, and the use of relaxant inhalations. But, in preference to both, I would recommend gargles of ice-water acidulated, and epithems of pounded ice applied externally. Professor Frank recommends, as in bronchlemmitis, a free use of calomel, in the proportion of five grains at a dose to infants of two years old, two or three times a day, or three grains every three hours, till fifteen grains have been taken. If this plan do not speedily answer, no time is to be lost, and bronchotomy must be had recourse to. But whether the opening should be made in the larynx, or below it, must be left to the judgment of the surgeon.

Sometimes commences mildly, and assumes a chronic form.

In a few instances, however, this disease seems to commence with comparatively little violence, and to run easily into a chronic form.

Chronic disease of the larynx.

[A disease, well deserving of the name of chronic laryngitis, has been faithfully described by Mr. Lawrence. The patients died of suffocation; but the progress of the complaint was slower than in the more acute modification of the disease, noticed by Doctors Farre, Percival, and Baillie*. The symptoms were not acute; nor did the inspection of the parts disclose any marks of active inflammation. The membrane, covering the chordæ vocales, was thickened, so as to close the glottis; and a similar thickening extended to a small distance from these parts, accompanied with an œdematous effusion into the cellular substance under the membrane. The epiglottis did not partake of the disorder. In one or two instances, this thickened state of the membrane was the only change of structure observed; but in others, it was attended either with ulceration of the surface near the glottis, appearing as if it had been formed by an abscess which had burst; or with a partial death of one or more of the cartilages of the larynx; viz. the arytenoid, thyroid, or cricoid. The rest of the air passages, and the lungs, were healthy. In most cases, Mr. Lawrence is an advocate for the early perform-

Appearances on dissection.

* See Med. Chir. Trans. vols. iii. and iv. and Trans. of a Society for the Improvement of Med. Knowledge, vol. iii.

ance of bronchotomy*. The prospect of success will of course very much depend upon the state of the lungs, and the disease being free from any other serious complication.] GEN. VII. SPEC. V. Empresma laryngitis.

In the *angina laryngea œdematosa* of M. G. L. Bayle, the expuition is glairy, rather than membranous. In the course of the chronic inflammation by which the disease is marked, and which produces the effusion, a few tubercles or caruncles are formed, that render inspiration suffocative, yet interfere but little with expiration. A cough, as may be expected, is sometimes a concomitant. Angina laryngea œdematosa of Bayle.

This form of inflammation has generally been found to take place in debilitated habits, or after an exhausting fever, or some other complaint. If the patient recover, it is usually in about three weeks: for the most part, however, no remedial plan succeeded at La Charité, and the disease terminated fatally in about a month or six weeks. Tracheotomy was often tried, but rarely with success. On dissection, some degree of ulceration, or purulent discharge, was commonly traced†. It ought to be observed, that Dr. M. Hall, Mr. F. White‡, Mr. Liston§, and others, have since succeeded with tracheotomy in several instances in our own country. If the inflammatory action commence below the larynx, it is called *tracheitis* by Professor Frank‖; yet the pain and struggle are here considerably less than in proper laryngitis, though they sometimes resemble the signs of sternalgia, or angina pectoris. General march. Tracheitis of Frank.

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* Med.-Chir. Trans. vol. vi. p. 221, &c.

† Mémoire sur l'Œdeme de la Glotte, ou Angine Laryngée Œdémateuse. Nouveau Journal de la Médecine, Janv. 1819.

‡ Dublin Hospital Reports, vol. iv. p. 561.

§ Edin. Med. and Surg. Journ. No. 77. p. 568.

‖ De Cur. Hom. Morb. tom. ii. p. 107.

## SPECIES VI.

## EMPRESMA BRONCHLEMMITIS.

### *CROUP.*

BREATHING PERMANENTLY LABORIOUS AND SUFFOCATIVE; SHORT, DRY COUGH; EXPECTORATION CONCRETE AND MEMBRANOUS; FEVER A CAUMA.

GEN. VII. SPEC. VI.

IN the first edition of the present work, as also in that of his volume on Nosology, the author was induced to follow M. Swediaur, Dr. Young, and various other authorities, in denominating this disease BRONCHITIS; but as the same term is used in a very different sense by various other writers, importing inflammation of the bronchiæ generally, though a sense hardly called for, as, except in the present instance, such affection is usually a symptom of catarrh or some form of pneumonitis, he has been induced to change the name of bronchitis for that of BRONCHLEMMITI; which, as importing MEMBRANOUS or MEMBRANE-LIKE inflammation of the bronchiæ, from λέμμα, "a sheath or membrane," as in neurilemma, a sheath or membrane of the nerves, is expressly descriptive of that concrete or tubular effusion which peculiarly characterizes the complaint. In a valuable treatise published by M. Bretonneau of Tours, since the second edition of the present work, it has been described under the name of *Diphtheritis*, from διφθέρα, pellis, exuvium*.

The bronchitis of various authors, and of the first edition of the present work.

Name, why changed.

[According to Laennec, Ballonius, in 1576, made the first mention of the disease. The best informed critics, however, now incline to the opinion, that croup was not unknown to physicians of more ancient times. The particular merit to which Ballonius can rightly aspire, is that of having first distinctly described the effusion of coagulable

* Des Inflammations spéciales du Tissu Muqueux, et en particulier de la Diphtherite, ou Inflammation pelliculaire, connu sous le nom de Croup, &c. Par P. Bretonneau, médecin en chef de l'Hôpital de Tours, 8vo. Paris, 1826.

lymph, or the false membrane in the larynx and trachea*. Laennec himself admits, that we owe the first good description of croup to Ghisi†. Dr. Home's "Inquiry," which, as Dr. Forbes observes, was the first systematic account of croup in this country, was published in 1765.] GEN. VII. SPEC. VI. Empresma bronchlemmitis.

This disease appears in the present day to exist in most parts of the world, and in the American States is called *hives*, supposed by my distinguished friend Dr. Hosack to be a corruption of the term *heaves*, and probably so named from the heaving or violent efforts of the muscles of the chest and abdomen which take place in breathing during its course‡. Disease known in most parts of the world at present; though not distinctly noticed till within the last century.

The writers on croup have given but one form of it, except what has been erroneously called spasmodic croup, a disease of a different kind, which has already been described under the name of LARYNGISMUS STRIDULUS. Properly speaking, however, there are two forms, an acute and chronic, under which the present species shows itself, and which may thus be distinguished as varieties: Hitherto erroneously arranged.

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|---|---|
| α Acuta.<br>Acute croup. | Sense of suffocation keen, and constrictive; chiefly seated in the larynx; respiration sonorous; voice harsh; cough ringing; great restlessness; terminating in a few days. |
| β Chronica.<br>Chronic croup.<br>Bronchial polypus. | Sense of suffocation obtuse and heavy; chiefly seated in the chest; cough severe, but intermitting; lasting some weeks or months. |

* Ballonii Op. Omn. Med. tom. i. p. 132. Venet. 1734. Also Rubini, Riflessionni sulla Malattia denominata Crup, p. 200; and Forbes's Trans. of Laennec on Diseases of the Chest, p. 118, note, 2d. edit.

† Martin Ghisi, Lettere Mediche. Cremona, 1749.

‡ For a complete bibliographical history of croup, Dr. Forbes refers to Michaelis, De Angina Polyposa, Argent. 1740. Rubini, Riflessioni sulla malattia comunemente denominata Crup, Parma, 1813; and Bretonneau, De la Diptherite, ou Inflammation Pelliculaire, Paris, 1826. These authors prove by extracts that the croup was known to several ancient physicians, particularly Hippocrates and Aretæus; although its precise anatomical characters were not, owing to the imperfect state of pathological anatomy. See Laennec on Diseases of the Chest, &c. Trans. by Forbes, note, p. 118. 2d. edit. EDITOR.

GEN. VII. SPEC. VI. Empresma bronchlemmitis.

The disease, in both varieties, usually commences with the common symptoms of a cough or catarrh; but essentially consists in a peculiar inflammation, that spreads through different parts or even the whole range of the windpipe, from the larynx to the minutest ramifications of the bronchiæ. In this extensive sense, the tube was called *bronchus* by the ancients; and I have hence preferred the term *bronchlemmitis* to that of *trachlemmitis*, or membranous imflammation of the trachea, as such a term would imply a limitation of the inflammatory action to the upper part of the bronchus alone, to which it is not confined in either of the forms before us.

Import of bronchus formerly, and on the present occasion.

a E. Bronchlemmitis acuta.

The FIRST VARIETY, importing the COMMON or ACUTE CROUP, the suffocatio stridula of Dr. Home, though it extends thus widely, usually commences in the larger parts of the tube; during which a peculiar effusion is secreted, that readily assumes a membranous form, and sometimes lines, not only the trachea above its divarication, but also its minutest branches, though the larger parts of the tube are first affected. When chemically examined, the secretion appears to consist chiefly, if not entirely, of the gluten, or coagulable lymph of the blood, diluted with its serosity, and copiously combined with that peculiar substance of the blood, detected by the labours of modern chemistry, which, from its essential tendency to concrete into a fibrous, and even a membranous texture, has received the name of fibrin.

Peculiar membrane-like secretion.

Chemical character.

By what means the mucous secernents throw forth this peculiar effusion in the present disease we know not. It is said by some writers to be secreted on no other occasion, and by no other organ; but this is unquestionably a mistake. There are few practitioners, perhaps, of accurate observation, who have not found it discharged at times from the intestinal canal; of which I have already given examples under DIARRHŒA *tubularis;* in which, as in croup, there is an inflammatory affection of the morbid organ, and a spasmodic constriction of the passage.

Sometimes secreted in other parts of the system:

Morbid anatomy of croup.

[Croup, says Professor Laennec, is an inflammation of the mucous membrane of the air-passages, with exudation of coagulable lymph, which, becoming concrete at the very moment of its formation, lines the inner surface of this membrane to a greater or less extent. When this

false membrane is removed, the subjacent tunic is found of a deep vivid red colour, occasionally livid and somewhat thickened. This colour is commonly very uniform over the whole space, covered by the false membrane, but is also not unfrequently unequal, and occasionally is even altogether wanting*. In the greater number of cases, the degree of redness and swelling is less, than in many instances of dry catarrh. We cannot, therefore, attribute the plasticity of the secretion in croup, the distinctive feature between it and the mucous catarrh, simply to a higher degree of inflammation; but rather to the peculiar nature of that inflammation. The false membrane corresponds exactly to the form of the canals which it invests. Its thickness is usually somewhat greater in the larynx and trachea, than in the bronchiæ, and varies from less than half a line to a line. Its consistence is about that of boiled white of egg; but this generally diminishes towards its extremities. It is of a white colour, sometimes with a shade of yellow, and is almost entirely opaque.

Gen. VII. Spec. VI. Bronchitis acuta. Morbid anatomy. Nature of the exudation.

Some days, or even hours, after its formation, it begins gradually to be detached from the mucous coat, to which it had been closely adherent, and, after being broken into fragments by the cough, is sometimes expectorated. The separation is effected by a more liquid secretion, which, becoming in its turn also concrete, constitutes a second false membrane. This process may be repeated several times in succession; but in general each successive formation is less consistent, than the preceding. The croupy membrane is most commonly restricted to the larynx and upper part of the trachea; but, in other cases, it extends over a great portion, or even the whole of the bronchial ramifications. Sometimes the disease is confined to the bronchiæ and their ramifications. More commonly, as has been shown by Bretonneau, the inflammation commences on the tonsils, or the pharynx, and from thence spreads, at the same time, downwards to the larynx, and upwards to the nostrils. The affection usually stops at the esophagus; but occasionally the false membrane extends to the stomach. In children, the disease almost always

Its expectoration. Its extent.

* Hufeland's Journ. b. vi. p. 559.

Gen. VII. Spec. VI. α. E. Bronchitis acuta.

begins in the bronchiæ, or larynx, and very rarely extends beyond the glottis; while, in adults, it more frequently originates on the tonsils or pharynx. M. Bretonneau has also shown, that what may be called plastic angina has been frequently mistaken for malignant sore throat. While, however, Dr. Forbes admits the correctness of the statement, that what has often been considered as a gangrenous affection of the throat, is merely an inflammation of the same kind as that of croup, and characterized by the formation of a membranous exudation of a peculiar kind, he does not assent to the proposition, that simple croup, or croup unaccompanied by any pharyngeal affection, does not exist as a separate disease*.]

Rarely attacks them after twelve years of age.

Dr. Cullen asserts, that acute croup seldom attacks infants till after they have been weaned; and that there is no instance of its occurring in children above twelve years of age. As a general rule this remark holds, but the disorder is, by no means unfrequent in infants at the breast, of which I had one example not long ago: and it has been found occasionally in persons considerably above twelve years of age†. Those who have once had it are more susceptible of it than before; though the susceptibility gradually wears off as they grow older. It is found equally in midland regions and on the coast; but perhaps more frequently in low, marshy grounds, than in drier uplands. [Our author believed, that there is no unequivocal instance of its being contagious, though it is occasionally epidemic. Some modern practitioners, however, amongst whom are Lobstein‡ and Bretonneau§, mention contagion as one of the causes of croup. A fact, recorded by the latter physician, and quoted by M. Guersent‖, is considered by M. Louis to be perfectly conclusive on the point. In another instance, related by M. Lobstein, a young girl, who had not been exposed to the same atmo-

* See Laennec on Diseases of the Chest, p. 119. 2d. edit. transl. by Forbes; also M. Bretonneau sur la Diptherite, Paris, 1826; and P. Ch. A. Louis, Mem. et Recherches Anat. Pathol. p. 242, &c. Paris, 1826.

† Du Croup, considéré chez l'adulte, in Mém. et Recherches Anat. Pathol. par M. Louis, p. 203, &c. Paris, 1826.

‡ Mem. de la Société Méd. d'Emulation, vol. viii.

§ De la Diptherite, 8vo. Paris, 1826.

‖ Nouveau Dict. de Médecine, art. Angine Coenneuse.

spheric influence as her sister, already ill with croup, was attacked by it after having been playing with her at the time when her disease was completely developed. Dissection after death left no doubt of the nature of the disease. Other facts, tending to prove the contagious nature of croup, are adverted to by M. Louis. Professor Laennec also refers to a case, showing the danger of respiring the patient's breath too closely*. The asthenic croup, described by Bretonneau as occurring in the hospitals of France, and often joined with malignant angina, is certainly contagious.]

GEN. VII. SPEC. VI. Æ. Bronchlemmitis acuta.

It commences usually with a slight cough, hoarseness, and sneezing, as though the patient had caught cold, and was about to suffer from a catarrh. And to these, in a day or two, succeed a peculiar shrillness and singing of the voice, as if the sound were sent through a brazen tube. "At the same time," says Dr. Cullen, who has well described the progress of the disease, "there is a sense of pain about the larynx, some difficulty of respiration, with a whizzing sound in inspiration, as if the passage of the air were straitened. The cough, which attends it, is sometimes dry; and if any thing be spit up, it is a matter of a purulent appearance, and sometimes films resembling portions of a membrane. Together with these symptoms, there is a frequency of pulse, a restlessness, and an uneasy sense of heat. When the internal fauces are viewed, they are sometimes without any appearance of inflammation; but frequently a redness, and even swelling appear: and sometimes in the fauces there is an appearance of matter like that rejected by coughing. With the symptoms now described, and particularly with great difficulty of breathing, and a sense of strangling in the fauces, the patient is sometimes suddenly cut off†." To which I may add, that the countenance exhibits great distress; the head and face are covered with perspiration from the violence of the struggle; the lips and cheeks are alternately pale and livid.

Description.

[Dr. Cheyne, who has written one of the best treatises on croup in the English language, has adverted to the fol-

* Op. cit. p. 125.

† Pract. of Phys. cccxxiv.

GEN. VII. SPEC. VI. «E. Bronchlemmitis acuta.

lowing changes, as indicating the different stages of the disease, and the degrees of danger.

Different stages of croup.

1st, There is a ringing croupy cough (to which many children are liable upon taking cold, more particularly those who have had an attack of croup), attended with little or no change in the breathing, or sound of the voice.

2d, The unusual shrill, croupy cough, with difficult breathing; the necessary supply of air being with difficulty inspired, from the obstruction of the passage. The voice is altered, broken, both hoarse and puling. The difficult breathing in croup has been compared to the sound of air passing through thick muslin; it rather appears, says Dr. Cheyne, like the sound of a piston forced up a dry pump. It varies considerably, however; for it is either like the sound, to which it has just now been compared, dry and hissing, audible in different degrees; or, when the swelling and spasm of the larynx are greater, it is crowing, and sometimes creaking and suffocative. Under this extremity of difficult breathing, children are said to have perished.

3d, The cough and voice are stridulous; the respiration is difficult, laborious, creaking, sometimes suffocative, varying in the degree of difficulty and laboriousness.

4th, The voice is whispering and low; the cough less frequent, and not audible at the opposite side of the room. There is the act of coughing without the sound; the respiration increasing in difficulty and quickness, laborious, and interrupted.

Degree of danger attending these stages.

1. According to Dr. Cheyne, the first is a state, which is rather the forerunner of an alarming attack of croup. It is often without danger. It points out the children, who, when exposed to the usual excitements, are most liable to croup.

2. When, with the croupy cough, the breathing continues difficult, the serious attack has commenced, and the child is in danger. In this state, the skin is warm, the tongue white, the pulse full and quick, and the countenance much flushed. The usual mucous secretion is interrupted; the patient, if not an infant, is timid and apprehensive; and the eyes are heavy, watery, and bloodshot. The degree of danger is now to be estimated by the breathing.

3. This state denotes the second stage of croup, or that

of effusion, which, according to Dr. Cheyne, is generally hopeless. The countenance is still flushed; but with marks of defective circulation. The lungs no longer purify the blood. There is a purple redness in the cheeks, eyes, and nails. The complexion is often mottled, or the flush on the cheeks is circumscribed. The pulse is smaller and very quick. There is sometimes an expectoration of mucus, mixed with flakes of puriform matter. The urine has a sediment in it. The eyes are prominent and bloodshot; the pupil is dilated; and the iris pale.' When the breathing is most violent, jactitation occurs, and lethargy, when it is least disturbed.

Gen. VII. Spec. VI. «E. Bronchemmitis acuta.

4. This is the moribund state. The trachea is coated with effusion. The face is leaden, and the eye filmy. The extremities are cold and swelled. The muscular power is exhausted, and the child nearly insensible *.

The Editor deems the following observations, made by Professor Laennec on the symptoms of croup, well deserving of recollection. If we except the expectoration of membranous fragments, or the appearance of false membrane in the fauces, not one of the symptoms is pathognomonic. The crouping voice, or sound, independently of its not being always well marked, does not occur until after the disease has made great progress. The cough, he says, is similar, or nearly so, in other diseases, particularly in certain cases of hooping-cough, in which the *sonorous inspirations* sometimes perfectly resemble the crowing of a cock. Laennec had of late only met with one case of croup, sufficiently severe to be recognised from the beginning. It was soon more fully characterized by the expectoration of fragments of false membrane, moulded on bronchiæ of different diameters. In this case, which occurred in a child six years old, the stethoscope detected, during the whole course of the disease, no other respiratory sound but that of a *dry respiration*, evidently tubular or bronchial, unmixed with any of that crepitous dilatation of the pulmonary cells, so strongly marked in infancy. This sign, coinciding with a natural resonance of the chest, will suffice (if it is constant), to indicate croup, affecting the

Only one pathognomonic symptom, according to Laennec.

Sound of respiration in bronchial croup.

* See Cheyne's Pathology of the Larynx and Bronchia, 8vo. Edin. 1809.

GEN. VII. SPEC. VI. α E. Bronchlemmitis acuta.

bronchiæ; since it exists in no other case, except sometimes, and in a much less degree, in dilatation of the bronchiæ; a chronic affection, generally of very partial extent, and not liable to be confounded with croup*.]

Whence the danger of the disease:

The essence of croup consists in the secretion of the viscid and concrete lymph, which is perpetually endangering suffocation. Dr. Cullen does not dwell sufficiently upon this symptom; but ascribes the danger principally to spasmodic action, and represents the accompanying fever, which, on his hypothesis, is also a spasmodic action, to

whether from spasm,

be very considerable; but spasm was with him, as we have already seen, a favourite doctrine, and his judgment was often warped by it. Dr. Marcus, of Bamberg in Bavaria,

or inflammation:

who regards all fevers as inflammation of some organ or other, and as entirely seated in the arterial system, regards croup also as a local inflammation alone, utterly independent of spasm, which neither exists here, nor in fevers of any kind: and attributes the danger to this symptom solely: which is the more extraordinary as he regarded croup to be a disease identic with hooping-cough, in which the spasm or convulsion is the most prominent symptom. [Croup, even when most partial, is almost always attended with great constitutional disturbance. In the majority of cases, the symptomatic fever is acute, and very severe; the action of the heart being frequently irregular. In some cases, particularly such as occur in hospitals, it is observed by Laennec, that the pulse is but little accelerated, the skin rough and dirty, the debility extreme, and the breath fetid, even where no gangrenous specks exist in the throat. This variety is denominated asthenic by Guersent and Bretonneau, and is that which is found sometimes to ac-

both of which are present.

company malignant sore-throat†.] The locality of the disease, as well as the peculiar character of the inflammation, sufficiently distinguish it from catarrh, in which there is also some inflammation of the mucous membrane of the trachea, though of a common kind, and rarely limited to this organ. In children, however, it frequently treads close upon catarrh, measles, hooping-cough, and

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* See Laennec on Diseases of the Chest, p. 124, 2d edit.
† Ibid. p. 123, 2d edit. by Forbes.

any other disease that has debilitated the powers of the lungs: for, as Dr. Michaelis observes, whatever tends to weaken or produce any degree of irritation in the lungs, so as to occasion a preternatural secretion into that organ, may be considered as a predisposing cause of croup. Professor Dupuy, of the Veterinary School at Alfort, gives an instance of its having been communicated in a village, in which it was epidemic, to a dog, brought under his care from a mistaken idea that the dog was suffering from hydrophobia. During the progress of the disease this animal had the shrill, ringing voice of children labouring under it; and speedily died of suffocation. On opening the body, a false membrane was found in the larynx, of a reddish colour, which extended to the bronchiæ; and the lungs were filled with an abundant serous effusion *.

GEN. VII. SPEC. VI. α E. Bronchlemmitis acuta.

Communicable to dogs.

[M. Louis has published some highly interesting observations on the croup of adult persons, and ably pointed out both its agreements with, and differences from, the same disease in children. In the latter subjects, it resembles at first a slight cold, speedily followed by pains in the fore part of the neck, and usually unpreceded by sore-throat. The cough soon becomes violent, recurring in paroxysms; there is a hissing sound in the breathing; with dyspnœa; the croupal voice, &c. On the contrary, in adult patients, there is more or less soreness of the throat at the very commencement of the attack, accompanied with heat, difficulty of deglutition, and little or no cough. The inflamed tonsils and pharynx soon become covered with coagulable lymph, and then pain begins to be experienced in the larynx and trachea, speedily followed by dyspnœa, anxiety, change of the voice, but rarely with suffocative paroxysms, even in the last hours of existence. M. Louis, however, regards this description as only generally applicable, since, in many cases lately recorded, children are represented to have had a soreness of the throat, as one of the earliest symptoms; and, according to M. Guersent, croup frequently begins in this way in infants at the breast. In the croup of adults, the nasal fossæ, the pharynx, the velum palati, the uvula, the tonsils,

Comparison of croup in adults with the disease in children.

* Bibliothèque Médicale, Août, 1822.

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the larynx, the trachea, and sometimes the bronchiæ were found, on dissection, covered with coagulated lymph, or a false membrane, the consistence and thickness of which diminished according to the order in which the parts are here specified *.]

Treatment.

The cure demands prompt and active remedies; and must depend, not so much upon searching into and correcting the remote cause, or even counteracting the spasm, as in counteracting the inflammation, preventing the further effusion of lymph, and promoting the loosening and discharge of that which already invests and obstructs the larynx and trachea. [According to Dr. Cheyne's view of the disease, there is but one indication in the first stage; namely, to moderate the increased action in the mucous membrane of the respiratory organs. In the second, this increased action requires to be reduced; the expectoration of the viscid lymph to be promoted; and the patient's strength to be supported.]

Copious bleeding.

There is in the patient a perpetual effort to remove this solid secretion by coughing; but the cough is for the most part dry and ineffectual, and nothing more than a little flaky mucus is excreted. Very copious bleeding † at the commencement of the attack, by breaking down abruptly the inflammatory action, has sometimes carried off the disease at once. This M. Fieliz and Dr. Cheyne recommend from the jugular veins ‡, and M. Ghisi by topical scarifications; but, in infancy, leeches will usually be found to answer best; and, in adults, their repeated application may be useful after general bleeding. Emetics have afterwards been tried, but with doubtful success: sinapisms § and blisters ‖ with as little. [It deserves to be mentioned, however, that all these means are spoken favourably of by Professor Laennec and Dr. John Forbes ¶, and that emetics are the remedy in which Dr. Cheyne has most confidence. When an attack of croup is appre-

Emetics doubtful: sinapisms and blisters.

* P. Ch. A. Louis. Mém. et Recherches Anat. Pathologiques, p. 239—242, &c.

† Michaelis, Richter's Chir. Bibl. b. v. p. 739.

‡ Fieliz, Richter's Chir. Bibl. b. viii. p. 531. § Fieliz, loc. cit.

‖ Inquiry into the Nature, &c. of the Croup.

¶ See Laennec on Diseases of the Chest, transl. by Forbes, p. 126-7, 2d edit.

hended, the latter physician prescribes an emetic, the warm bath, a dose of jalap and calomel, and dilution. When the first stage is formed, he has recourse to an emetic, the bath, a mercurial purge, venesection, a blister over the sternum, calomel in doses of one, two, or three grains every hour, diluents, and the antiphlogistic regimen. In the second stage, emetics are his chief remedies; and he has recourse to cordials when the strength flags.] The inhalation of warm vapour, recommended by Dr. Home, can rarely be practised, from the extreme restlessness of the little patient; and the remedy, principally relied upon in the present day, and which certainly seems in many instances to have operated like a charm, is large and repeated doses of calomel; of this, not less than five or six grains are commonly given to very young children, and continued every two or three hours till there is a discharge of a green bilious matter, which seems to be the criterion of its having taken effect, and not only excites a salutary counter-action, but prevents the further secretion of thick lymph. [The mercurial practice, joined with the antiphlogistic, is that of which the editor's observations lead him to entertain the highest opinion. The free and quick exhibition of calomel was first proposed by Dr. Rush, and afterwards recommended by Dr. Hamilton. From an observation, however, made by Dr. J. Forbes, it appears that he and some other practitioners think the efficacy of such treatment has been overrated.] Relaxants, as antimony and ipecacuan, should be employed during the action of the calomel: and as soon as this has answered, sedatives, as opium or hyoscyamus, may be united with the relaxants: but above all the hydro-cyanic acid, as already recommended in hooping-cough, and to the same extent. If this plan should not succeed, Dr. Michaelis recommends tracheotomy, and has so little apprehension of its being attended with danger, that he advises it to be had recourse to soon after the attack, as affording a convenient opportunity of bringing away the preternatural membrane which serves as a lining to the trachea*. But this advice is given with more courage than judgment. Whenever per-

Gen. VII. Spec. VI. a E. Bronchitis acuta.

Vapour of warm-water.

Calomel.

Relaxants.

Narcotics.

Prussic acid.

Tracheotomy.

* De Anginâ Polyposâ, &c. ut suprà.

GEN. VII SPEC. VI. a E. Bronchlemmitis acuta.

formed, it should be after every other remedy has failed, and not before any other has been attempted. [When the exudation extends through the trachea, and ramifications of the bronchiæ, as the pathological observations of Laennec, Louis, and many other writers prove to be frequently, though not always the case, there will be but little hope of benefit from such an operation*. Dr. Cheyne also long ago showed, that the operation cannot be necessary for the purpose of letting air into the trachea; for in patients, who died of the disease, he found a pervious canal one-fourth of an inch in diameter. He considered the operation as equally unfitted for the removal of the membrane; for, from its extent, tenacity, and adhesions, this is almost always impracticable, and even if it could be extracted, respiration would be but little improved, as the ramifications of the trachea, and bronchial cells, would still remain obstructed†.

Cause of death.

The question relating to this operation is intimately connected with another point; namely, how far the fatal result of croup may be really owing to the obstruction of the glottis with coagulable lymph. If, says M. Louis, the false membrane lessen the air passages of a child more than those of an adult, it is seldom in a degree sufficient to produce a mechanical impediment to the free circulation of air; and as death frequently occurs in children after the false membranes have been expectorated, this result is no longer ascribable, at least in all cases, to the mechanical impediment to the entrance of air into the lungs. The cases and dissections, recorded by M. Louis, prove how rarely this impediment exists in the adult, in whom death takes place notwithstanding the breadth of the larynx; and he inclines to the opinion, that too much stress has been laid upon the mechanical obstruction of the air-passages, as an explanation of the cause of death in children: he imputes more effect to the spasm of the glottis and trachea; an explanation, which he conceives is equally applicable to the adult and the young subject. But, he observes, that it ought not to be forgotten, that the spas-

* Boyer, Traité des Maladies Chir. &c. t. vii. Paris, 1821.

† See Cheyne's Pathology of the Larynx and Bronchia. Edin. 1809.

modic symptoms never occur until the larynx has been lined with coagulable lymph, and hence this lymph, and the inflammation of which it is the production, are, in the opinion of M. Louis, always the primary cause of the spasm. He also adverts to various dissections by himself, M. Lobstein, and M. Viesseux, from which it appears that the lungs and other organs do not exhibit after death the appearances, commonly found in cases of asphyxia. At the same time, he conceives, that the deficiency of respiration has a share in producing the fatal termination, but that the functions of the heart and lungs cease simultaneously, so as to make a difference from asphyxia, strictly so called *. The course of the disease, according to the view taken of it by Dr. Cheyne, is increased action, effusion, laborious respiration, circulation of blood with venous colour, sensorial debility, and death.] Gen. VII. Spec. VI. a E. Bronchlemmitis acuta.

Dr. Harden of St. Petersburgh has of late, after every other remedy had failed, ventured upon cold affusion. He first tried it, in a fit of despair, upon a child of his own, eighteen months old. The child was placed in a bathing-tub, with its belly upon a cushion of hay; and a pail of water, of 12° Reaumur, was then poured quickly from the head along the spine. The symptoms, after the first affusion, soon diminished; the operation was repeated at intervals, ten times, and the child recovered. He has since employed it with like success in the first stage of the disease; and Dr. Miller, another physician of St. Petersburgh, is said to have been, still more lately, as fortunate as himself†. The plan is certainly worthy of further trial. Cold affusion.

Under the genus LARYNGISMUS belonging to the second order of the preceding class, I have observed, that the spasmodic affection there described, from its inducing a sense of suffocation, and possessing various other symptoms resembling those of croup, has often been mistaken for this last complaint, and been denominated spasmodic croup; though without the pathognomonic sign of a membrane-like exudation, and for the most part without any Distinguished from laryngismus.

* C. Ph. A. Louis, Mém. Anat. Pathologiques, p. 245. Paris. 8vo. 1826.

† Extract of a Letter from D. Von dem Busch of Bremen, to Dr. Eberle of Philadelphia. Jan. 6, 1822.

GEN. VII. SPEC. VI. αE. Bronchlemmitis acuta.

inflammation whatever. It attacks children suddenly, most frequently in the night, and is apt to return in paroxysms, with short intervals of ease: whilst the real acute croup has no intervals, but continues its alarming course, till it destroys the patient, or yields to the means made use of. During the action of the spasm in the former case, however, there is a considerable hoarseness and shrillness in the voice, and, from the struggle, a profuse perspiration about the head and face. Violent as these symptoms are, they commonly yield to a brisk antimonial emetic: after the operation of which the patient commonly falls into a sound sleep, and awakes with little remains of the complaint.

βE. Bronchlemmitis chronica.

The SECOND or CHRONIC VARIETY of BRONCHLEMMITIS, I have introduced chiefly on the high authority of Dr. Warren, who calls it, as I have already observed, a bronchial polypus; a term which may lead to mistakes; and which, in its application to any other part of the body, does not import the febrile action which exists as a characteristic of this disease. A concrete parenchymatous material, obstructing the bronchial vessels, coughed up in smaller or larger masses, sometimes easily and without any attachment to the sides of the bronchial tubes, and sometimes so extensively inosculated by radicles or radiating vessels as to produce a fatal hemorrhage on their being thrown up with violence, has been noticed from a very early period in the history of medicine to the present day. Bartholine, Tulpius, Ruysch, Gretz, and Morgagni, have all been appealed to as giving examples of this affection; and it is very possible that even Hippocrates may allude to something of the kind in the case of Phericides, who, he tells us, was accustomed to bring up from his lungs, in a fit of coughing, γαλακτώδεα, "white milky concretions;" and at length, before he died, οἷον ἐκ μύξης μυκητὰ, ξυνεστηκήτα, λευκῷ φλέγματι περιεχόμενα, "firm mucus-like excrescences, surrounded with white phlegm*." But the complaint does not seem to have been distinctly described till Dr. Warren's history of it†. The case, by which he chiefly illustrates it, is that of a young lady, eight years of age, of

How far noticed in earlier times.

Not distinctly noticed till Warren's account. Illustrated.

* De Morb. Popular. lib. VII. sect. xli. † Med. Trans. vol. i. art. xvi.

a strumous habit, who was suddenly attacked with difficulty of breathing, attended with a short, dry, and almost incessant cough; but without any pain in the side or chest. The symptoms diminished in the ensuing night, and the complaint appears to have been productive of little inconvenience for six weeks; when it returned with additional severity, with costive bowels, a white but moist tongue, and a pulse too quick to be counted. Bleeding, purgatives, and the oxymel of squills relieved her, but the breathing was still laborious; she had wasting night-sweats, and the pulse beat from a hundred to a hundred and twenty strokes in a minute for the ensuing twelve days, at the close of which period she woke suddenly in the night, and was almost choked in bringing up, by coughing, what Dr. Warren calls "a large polypous concretion." It came up without either blood or mucus, and instantly gave her great relief. For two months afterwards, she seldom passed three days without coughing up masses of the same kind, but none so large: she was tolerably easy when sitting still, or in motion in the open air; and though her pulse never beat less than a hundred and twenty strokes in a minute, she had a good appetite, gained some degree of strength and flesh, and entirely lost her night-sweats. She was now suddenly attacked at night with another paroxysm of distressful breathing and a sense of suffocation, and, in the morning, threw up a larger membranous concretion than at any time antecedently, and in the course of the four ensuing days, a quantity quite as large as in the six preceding weeks. From this time the oppression on the lungs returned irregularly after intervals of five, eight, ten, or twenty days, always followed and always relieved by an expuition of the same concrete material; till, at the close of a twelvemonth from the first attack, the patient complained of a pain in the right heel, an abscess formed there, and the os calcis was found carious. From this time the bronchial affection ceased, the breathing was perfectly free, and no more concretion was thrown up.

GEN. VII. SPEC. VI. ÆE. Bronchitis chronica.

Dr. Warren conceived this concrete substance to have been secreted by the mucous glands of the bronchial vessels. But the existence of fibrin, as a constituent part of the blood, was unknown at the period in which he wrote; and his plates and description of the membranous matter

Concrete substance expectorated, how accounted for at first: but incorrectly.

GEN. VII. SPEC. VI. ßE. Bronchlemmitis chronica.

expectorated, show evidently that, like that discharged in croup, and often from the intestinal canal, it was composed of this formative element, intermixed with gluten, secreted in layers, and affecting a tubular structure.

Treatment.

In connexion with the plan of treatment already pointed out, it is highly probable, that much benefit might, in this chronic form of bronchlemmitis, be derived from the use of mercury and foxglove, and a seton or issue.

Since the publication of the second edition of this work, M. Bretonneau, in his treatise on the specific inflammations of the mucous membrane to which we have just referred, has noticed another form of this disease, in which the inflammation either spreads from the trachea to the tonsils and pharynx, or, as is more commonly the case, begins in the latter with the ordinary symptoms of paristhmitis maligna, or malignant sore-throat. In the cases to which he refers, this last disease was epidemic and contagious: and when the affection took this complicated course, the ulcerative process ceased, and the concrete membrane was produced in its stead. There seems to have been something peculiar in the season or the locality that could thus deflect the inflammation of quinsy from its ordinary course, though we meet with instances of modification at times in other inflammations. A speedy cure was sometimes obtained by a rapid and momentary application of concentrated muriatic acid on a piece of sponge, where the inflammation could easily be reached; but, in other cases, it best yielded to a free course of calomel and mercurial friction *.

[Dr. Cullen, as we have mentioned, noticed the occasional redness of the fauces in croup, and as the subject was also considered by Dr. Cheyne, some of the observations of M. Bretonneau may not appear altogether new. Dr. Cheyne objected to the plan of regarding the disease as croup, when variously complicated; but, as an able critic has remarked, if the cough, voice, and mode of breathing be those of croup, and if a membrane be actually found on dissection after death, although sloughs may have been observed on the uvula and tonsils, and although the paroxysm may have supervened to, or been complicated

* Des Inflammations Spéciales du Tissu Muqueux, &c. 8vo. Paris, 1826.

with, scarlatina, with measles, or with small-pox, still it is croup; not, indeed, pure and idiopathic, but, though complicated, still croup, still inflammation of the larynx and trachea, exudation, and formation of membrane, giving rise to the same series of symptoms which distinguish idiopathic croup*. The cases and dissections, recorded by M. Louis†, materially corroborate the doctrine defended by the anonymous critical writer.] GEN. VII. SPEC. VI. β E. Bronchlemmitis chronica.

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## SPECIES VII.

## EMPRESMA PNEUMONITIS.

### *PERIPNEUMONY.*

INFLAMMATION OF THE LUNGS; OBTUSE PAIN IN THE CHEST; CONSTANT DIFFICULTY OF RESPIRATION, ALLEVIATED BY AN ERECT POSITION; TUMID, PURPLE FACE, OR LIPS; COUGH, GENERALLY MOIST, OFTEN BLOODY; PULSE USUALLY SOFT.

INFLAMMATION of the lungs has been described under many names. The most common perhaps is peripneumonia, for which pneumonitis, employed first, I believe, by Bourgaud, in his Dissertation, published in 1754, is here substituted, merely on account of the regularity of its termination. [The disease is one of the most severe and frequent, and, in cold and temperate climates, is calculated by Laennec to be productive of more deaths, than any other acute disease.] GEN. VII. SPEC. VII. Synonyma.

The disease, as above characterized, is traced under the three following varieties:

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| α Vera. True Peripneumony. | Fever a cauma; pain severe, little expectoration in the beginning. |

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* Edin. Med. Journ. vol. v. p. 457.

† Mém. et Recherches Anat. Pathol. p. 204, &c. Paris, 1826.

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| GEN. VII. SPEC. VII. α E. Pneumonitis vera. | β Maligna. Malignant Peripneumony. | Fever a synochus or typhus; the debility extreme from an early period. Often epidemic. |
| | γ Notha. Spurious Peripneumony. | Great secretion and expectoration, with a mild cauma. Occurring in weakly habits, and often connected with a catarrh. |

The FIRST of these varieties, or TRUE PERIPNEUMONY, is, perhaps, the most common, and has been more generally treated of than the rest.

United by Cullen with pleuritis.

Dr. Cullen has united inflammation of the parenchyma of the lungs, which is here alone contemplated, with inflammation of their membranes; believing that we have no means of ascertaining a difference from the course or concomitancy of the symptoms, and, in this view of the disease, he has been followed by Professor Frank, who, however, retains the term *pleuritis*, but limits it to what has occasionally been called *bastard pleurisy**. In pleurisy, however, the face is comparatively but little flushed, and far less tumid; the pulse is harder; the cough less violent, and, from the beginning to the end, without expectoration; the seat of pain also is fixed: while in peripneumony it shifts not only to different parts of the same side, but often from the one side to the other. However, some degree of pleurisy frequently accompanies pneumonitis from continuous sympathy†; but then it is not idiopathic pleurisy, nor strictly possessed of its symptoms. ["Nothing is more common," says Professor Laennec‡, "than to find pneumonitis altogether simple, or complicated only with so slight a degree of pleurisy as in no respect to increase its danger or modify its progress.] Percussion, if skilfully managed, will often ascertain the particular part in which the inflammation is seated, but the stethoscope will prove a still better diagnostic; for the use of which the reader is referred to the treatment of PHTHISIS in the ensuing volume.

Distinctive characters.

Yet sometimes found concurrent.

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* De Cur. Hom. Morb. Epit. tom. ii. sect. 185. 8vo. Mannh. 1792.

† Morgagni, De Sed. et Caus. Morb. Ep. Art. 13, 14. 37.

‡ On Diseases of the Chest, &c. p. 125, 2d edit. by Forbes.

Inflammation of the substance of the lungs bears nearly the same relation to pleurisy, or inflammation of the membrane that lines it, as profound or parenchymatous cephalitis bears to meningic. The two former, however, are somewhat more distinct and less liable to run into each other than the two latter, because one half the pleura, from its duplicature, is more remotely situated from the lungs and less connected with them. And I have hence followed the ordinary division, and treated of pneumonitis and pleuritis as distinct species, rather than varieties of one common species, which is the view taken of meningic and profound cephalitis. In both sets of disease, however, the membranous is the more acute affection, evinces more violent and painful symptoms, and runs through its course more rapidly. And hence, in pneumonitis, as in deep-seated phrensy, the pulse is sometimes soft*, the fever small†, and the disorder occasionally protracted to twenty days or more‡.

Gen. VII. Spec. VII. « E. Pneumonitis vera.

More easily distinguishable than inflammation of the brain and its membranes. And why.

Analogy between cephalitis and the diseases in question.

[According to Professor Laennec, the lower part of the lungs are those most commonly occupied by pneumonitis, and he says, that when the disease involves the whole organ, it is almost always in the inferior part that it commences. These circumstances he views as affording a strong argument against the opinion of Broussais, that tubercles are the product of inflammation. "If this were true," he says, "the inferior and not the upper lobes ought to be the principal site of tubercles, but the reverse is well known to be the truth§." From a note, however, inserted in Dr. Forbes's translation of Laennec's invaluable treatise, some doubt appears to exist, respecting the correctness of this author's statement. It is, indeed, corroborated by Andral, although, as Dr. Forbes remarks, hardly in the degree we might have expected from Laennec's observations. Out of eighty-eight cases of pneumonitis examined by Andral, the lower lobe was affected in forty-seven; the upper lobe in thirty; and the whole lung in eleven‖. Since the publication of Laennec's work, the

Part of the lungs most frequently affected.

* De Cabanis, Phænom. Med. † Cleghorn, p. 262.
‡ Stoll, Rat. Med. Part II. p. 376. Act. Nat. Cur. vol. v. obs. 124.
§ Laennec on Diseases of the Chest, p. 199, 2d edit. by Forbes.
‖ Andral, Clinique Médicale, tom. ii. p. 317.

GEN. VII. SPEC. VII. a E. Pneumonitis vera.

pupils of Broussais have very often shown the latter physician cases of hepatization of the upper lobe; Frank even declares his own experience to be the reverse of Andral's. "Frequentius forte *superiores* pulmonum lobos inflammatos deteximus*." In fifty-nine cases examined by M. Chomel, there were thirteen examples of the upper lobes being affected; eleven, of the lower; thirty-one, of the whole lung; two, of the posterior part; and one, of the middle. The right lung is said to be more frequently attacked than the left, not only in cases of pneumonia, but in almost every other disease to which the lungs are subject. This fact, which is noticed by Morgagni, is confirmed by M. Andral, who has calculated, that, out of two hundred and ten cases of pneumonia recorded either at La Charité, or by Morgagni, Stoll, De Haen, Pinel, or Broussais, the right lung was affected in one hundred and twenty-one; the left in fifty-eight; and both lungs in twenty-five; the particulars of the other six being unknown†. In fifty-nine dissections, performed by M. Chomel‡, the right lung was affected in twenty-eight of the patients, the left in fifteen, and both in sixteen.]

Right lung attacked oftener than the left.

Causes.

The causes of true peripneumony are those of inflammation in general; particularly excessive exertion of the lungs, or cold, applied to the skin, mouth, and stomach. It attacks the robust and plethoric more frequently than the spare and delicate. [While Laennec admits that, in such persons, the inflammation is more acute, the fever higher, and the disease more easily recognised and cured, he asserts that the disorder is much more common and fatal in old persons, in whom it is apt to run rapidly into suppuration. Children are likewise very subject to it, and the more so the younger they are. "In them," says Laennec, "the disease is frequently mistaken, because they swallow the expectoration, and death mostly takes place before any hepatization has occurred, or only very partially." The facility, with which they fall victims to the disorder at its very commencement, is ascribed by Laennec to the greater necessity of respiration in early infancy.] The disease prevails most in cold weather, or sudden changes from hot to cold.

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* De Cur. Hom. Morb. tom. ii. p. 132.

† Andral, Clinique Médicale, tom. ii. p. 317.

‡ Dict. de Médecine, tom. xvii. p. 508.

[It is remarked by Laennec, that cold operates as a cause much less powerfully when it immediately follows excessive heat, and is not prolonged. The Russian, who rolls himself in the snow after coming out of the hot bath, or the bakers, who go from their heated ovens into an atmosphere of a temperature below zero, escape the disease; while porters, whose occupation leads them to stand for a length of time at the corners of the streets, are frequently affected by it. In general, it is a disease of winter and cold climates, and is comparatively rare in the equatorial regions *.] Noxious exhalations have sometimes proved a cause. To these we may refer the frequency of this disease in the outskirts of Mount Vesuvius, as remarked by Vivenzi†; and on this account it is described by Baronius‡ and Bovillet§, as endemic. [The poison of serpents, and especially that of the rattlesnake, frequently bring on pneumonitis, and the injection of various medicinal substances into the veins has the same effect.

Gen. VII. Spec. VII. α E. Pneumonitis vera.

In an anatomical point of view, pneumonitis presents three degrees or stages, to which Laennec assigns the terms *obstruction* or *engorgement*, *hepatization*, and *purulent infiltration*.

Morbid appearances found after death: their three stages.

In the first stage, the lung is externally of a livid or violet hue, heavier, and much more solid than natural. It is, however, still crepitous, but much less so than in the sound state, and, on pressing it, we find that it is injected with fluid. It retains the impression of the fingers nearly like an œdematous limb. When cut into, it presents a livid or blood-coloured appearance, and a frothy, serous, more or less bloody fluid issues from it in abundance. The natural alveolar and spongy texture of the viscus, however, may yet be distinguished, except at some points where the part is more solid, indicating the transition from the first to the second stage.

In the second stage, or that of hepatization, the crepitous feel is entirely lost, and the lung has acquired the consistence and weight of liver. It is also frequently less livid

* See Laennec on Diseases of the Chest, &c. p. 220. 2d. edit.

† Epist. ad Haller. iv.

‡ Pleuropneumoniâ ann. 1633, Flaminiam infestante. Fidi. 1536.

§ Mémoires sur les Pleuropneumonies Epidémiques, p. 556.

GEN. VII. SPEC. VII. a E. Pneumonitis vera.

externally than in the first stage, but internally its redness is more or less deep, the colour varying at different points, from that of violet-gray to blood-red. With these different colours, as is pointed out by Laennec, a striking contrast is formed by the bronchial tubes, the blood-vessels, the specks of black pulmonary matter, and the thin cellular partitions dividing the pulmonary substance into portions or lobules of unequal size. These partitions, which in a sound state of the organ are not easily perceived, are now rendered quite distinct by their whiteness. If a portion of lung in this state be cut in pieces, hardly any fluid escapes from it; but if the incised surface be scraped, a little bloody serum may be collected, which is turbid and thick, and not unfrequently blended with another fluid, which is thicker, opaque, whitish, and puriform. When the incised surfaces are exposed to the light, the pulmonary substance will be found to have entirely lost its cellular appearance, and presents a granular aspect, as if composed of small red grains, oblong and somewhat flattened. This granular texture is considered by Laennec to be the criterion of inflammation of the lungs, by which it may be best discriminated from the tubercular obstruction. The granular appearance is rendered still more conspicuous when a portion of hepatized lung is torn. The pulmonary substance now seems to consist of an infinity of small grains, round or oval, very equal in size, and of the several colours already mentioned. They are plainly the air-cells changed into solid grains by the thickening of their parieties, and the obliteration of their cavities by a concrete fluid. Andral even regards pneumonitis as consisting essentially in inflammation of the air-cells, the inner surface of which, he says, secretes at first a muco-sanguineous, and then a purulent fluid*. The hepatized lung seems at first sight larger than natural, but this is not the fact, and the appearance is referred by Laennec to the lung not contracting, as a sound lung does when the chest is laid open. He has measured the chest, but never found it to be dilated, which is a great difference of peripneumony from pleurisy.

In the third stage, or that of purulent infiltration, the

* Andral, Clinique Médicale, tom. ii. p. 312.

lung has the same degree of hardness, and the granular appearance; but it is of a pale yellowish colour. The pus, as it begins to form, appears in small detached yellow points, increasing the mottled colouring already noticed. By degrees, these points unite, and the whole lung assumes an uniform straw or lemon colour; and when incised, pours out more or less of a yellow, opaque, viscid matter, evidently purulent, but much less fetid than the pus of a wound. The substance of the lung is also more humid and soft, than the red hepatization. As the purulent softening increases, the granulated texture gradually disappears, and at length the parenchyma of the lungs breaks beneath the fingers. According to Laennec, when the lung contains much black pulmonary matter, as is commonly the case in adults and old persons, the pus and substance of the lung assume an ash-gray colour. At other times, particularly in children, the pus is of a whitish yellow colour. The collection of the pus into one cavity, so as to form a true abscess, Laennec represents as an uncommon result of pneumonia; a point, however, on which Professor Himley and Sir A. Crichton do not agree with him. The foregoing three stages are frequently combined. Sometimes the hepatized portions are exactly circumscribed by a lobule; and, in children more especially, we sometimes find in the centre of the lungs a certain number of lobules arrived at the stage of hepatization, while those immediately around them are perfectly sound. The lining of the bronchiæ is generally very red in the inflamed portions of lung: it is also occasionally swelled; and sometimes the redness pervades the whole bronchiæ, but this is uncommon. In the purulent stage, the membrane is sometimes pale, sometimes red or purple, and in both cases softened.

Gen. VII. Spec. VII. a E. Pneumonitis vera.

Bronchiæ.

Laennec maintains, that the species of suppuration above described is the only one of common occurrence in cases of pneumonia; for the vomica of Hippocrates and modern practitioners, he says, is the result of the softening of a large mass of tubercular matter. Among several hundred dissections of peripneumonic subjects, he has not met with a collection of pus in an inflamed lung more than five or six times. They were not of large extent, nor numerous in the same lung. They were dispersed in different situations, and the lungs were in the third stage of inflamma-

GEN. VII. SPEC. VII. E. Pneumonitis vera.

tion. The walls of these abscesses were formed by the pulmonary tissue filled with pus, and in a state of soft disorganization, which gradually decreased as it receded from the centre of the collection. When we drag from the chest an inflamed lung, adherent to the pleura costalis, the parts most nfiltrated with pus frequently give way, or, without breaking outwardly, yield internally under the pressure, so as to form a soft sanious mass*: if cases of this kind were received as examples of pulmonary abscess, nothing would be more common. In the course of twenty years, Laennec had never seen in the lungs a true abscess of considerable extent except once, and, in this case, as in all the rest where abscess was found, the inflammation occupied only a part of the lung.

As Dr. Forbes has observed, the testimony of Broussais on the foregoing point is also very strong; for he declares, he has never met with a case of ulceration, without tubercles, but once; and then the inflammation arose from the lodgment of a musket-ball six years in the lungs†. Dr. Bright's work contains but a single example, unaccompanied by tubercles‡. The frequency of pulmonary abscess, as described by Dr. Baillie, and believed by the generality of English practitioners, is therefore considered by Dr. Forbes to be an error.

Ordinary duration of the three stages of the disease.

Laennec has seen the disorder continue in its first stage seven or eight days, and affect the whole of one lung and part of the other, and prove fatal before the occurrence of any distinct hepatization§. On the contrary, in other cases, particularly when the disorder has attacked debilitated, or very old subjects, or come on in the course of another severe malady, the inflammation reaches the stage of purulent infiltration in thirty-six, or even twenty-four hours. With these exceptions, Laennec fixes the ordinary duration of the different stages of pneumonitis as follows: the first stage usually lasts from twelve hours to three days, before hepatization is completed; this, or the second stage, lasts from one to three days, before spots of purulent in-

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* See also Andral, Clinique Médicale, tom. ii. p. 310.

† Hist. des Phlegm. Chron. tom. ii. p. 111.

‡ Bright's Reports of Medical Cases, p. 134.

§ Andral, Clinique Médicale, tom. ii. obs. 8 and 9.

filtration appear; and the suppurative stage continues from two to six days.

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With respect to what Laennec terms the physical signs of the disease, the crepitous rattle, as ascertained by the stethoscope, is the pathognomonic sign of the first stage. The sound of respiration is still heard distinctly, and percussion affords the natural resonance. The extent, over which the stethoscope detects the rattle, denotes the extent of the inflammation. When hepatization has taken place, neither the crepitous rattle nor the respiratory sound can be distinguished in the part affected; but, if the inflammation be near the surface, or at the roots, or in the upper lobes of the lungs, bronchophonism, or a resonance of the voice within the bronchiæ of the inflamed part, may be perceived. The bronchial respiration and cough always accompany bronchophonism. In the third, or suppurative stage, as soon as the pus begins to soften, the mucous rattle of Laennec becomes more or less perceptible.]

Stethoscopic inflammation.

The first symptoms are those of inflammation in general; but there is usually more shivering, or cold fit, and the hot stage is proportionally violent; the head aches considerably, and the urine is high-coloured, [or, to use Laennec's expression, it is of as deep a red as if it held blood in solution; and this character is as strongly marked as in any inflammatory disease whatever. The disorder is attended by active fever from its very beginning, the exceptions being rare, and only happening when the disease is of small extent. There is a great determination of blood to the head, and the face is much flushed.] The pain in the chest is rarely felt in any oppressive degree till these symptoms have continued for a day or two: though sometimes it is coetaneous. It is chiefly felt in a recumbent position, and more on one side than on the other. [It is obtuse and deeply seated. It is generally slight and extensively diffused; but sometimes confined to a point, even when there is no accompanying pleurisy. However, when it becomes very acute, it is commonly on account of the inflammation having extended to some part of the pleura *.] The cough is usually short, peculiarly distressing, and ob-

Description.

* Laennec on Diseases of the Chest, &c. p. 214. 2d ed.

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stinate; [though according to Laennec, sometimes so slight as not to be acknowledged by the patient, or attendants. The expectoration has, in many cases, an appearance quite characteristic. The sputa, when received into a flat and open vessel, unite into so viscid and tenacious a mass, that we may turn it upside down, even when full, without the sputa being detached. Their colour is often a shade of red, particularly that of rust; or it may be sea-green, tawny, orange, saffron, yellowish, or dull green. These various colours are often intermixed in stripes in the same pot. The mass of expectorated matter has a semitransparency, like that of horn. It is further remarked by Laennec, that if such sputa constantly existed in pneumonitis, no other sign of the presence of the disorder would be requisite. They commonly appear in the stage of obstruction, and retain their character, until hepatization is advanced; but frequently they are less viscid, little coloured, and nearly destitute of air-bubbles; and, at other times, we perceive only a few glutinous and slightly tawny sputa, amidst a great mass of mucous expectoration. Frequently the characteristic sputa are observed only at the very beginning of the disease, and sometimes not at this period, or only in such small quantity as hardly to admit of being collected. This is stated by Laennec to be particularly the case in old subjects, and in very rapid attacks. During the period of hepatization, the expectoration is slight and variable, but it usually consists of a small quantity of pituitous sputa, more or less viscid and vitriform, or of a whitish, or yellowish and half opaque mucus. After the purulent infiltration occurs, the expectoration is more decidedly mucous, and like that in the latter stage of catarrh. It rarely becomes entirely purulent. Lerminier and Andral consider an expectoration of a mixture of blackish blood and diffluent pituita as characteristic of the period of suppuration.] The pulse is variable; in some cases, hard and strong; in some, soft or oppressed; but, with the advance of the disease, it becomes feeble, sometimes fluttering. [When the determination of blood to the head is very great, and marked by coma in the beginning of the disease, as is often the case in old plethoric persons, the symptom is extremely unfavourable, as the patient then usually dies before hepatization is complete, or the in-

flammation reaches the stage of purulent infiltration in a few hours*.] Delirium is an occasional accompaniment, and a highly dangerous symptom, except where it alternates with the pneumonic symptoms, in which case it augurs well. In favourable terminations, the violence of the disease diminishes on or before the seventh day: if it increase beyond this, it commonly proves fatal.

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Peripneumony, like other inflammations, terminates in effusion, suppuration, or gangrene; and it has also a termination peculiar to itself, which is that of hemorrhage. The most salutary mode is effusion; for the vessels hereby become relieved, and the secernents immediately add to the relief by commencing an increased action, and consequently an increased discharge of mucus. In consequence of effusion, however, we occasionally find adhesions take place between the lungs and the pleura; and sometimes a collection of water in different parts of the chest; and not unfrequently a flow of blood, apparently from the mouths of the exhalants, without any rupture of vessels, giving a bloody tinge to the sputum. This last has been often regarded as an alarming symptom, but the alarm is altogether unfounded, for it generally affords considerable relief. Indeed an hemorrhage itself from the lungs has not always been attended with fatal consequences: it has occasionally proved critical, and carried off the disease in a few days: though a hemorrhage from the nose, no unusual attendant, is far preferable, as producing a like benefit with less risk. If the inflammation run into suppuration, the change is generally indicated by shiverings, with a remission of pain, and sometimes by perspiration where there has been none before. If gangrene ensue, the pulse sinks, the debility rapidly increases, and the eyes are fixed with a ghastly stare.

Terminations of pneumonitis.

Effusion the most favourable.

Yet sometimes adhesions follow.

Sometimes dropsy of the chest.

Bloody sputum not necessarily dangerous.

[With respect to gangrene of the lungs, it is rather uncommon. Laennec† is of opinion, that it can scarcely be reckoned one of the terminations of pulmonary inflammation, and still less the consequence of its intensity; since, in cases of this kind, the inflammatory character is very

Gangrene.

* Laennec, op. cit. p. 217.

† On Diseases of the Chest, p. 221. 2d edit.

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slightly marked, as well in regard to the symptoms as the appearances on dissection. He conceives, that there is some resemblance between gangrene of the lungs, and that of anthrax and malignant pustule, in which the surrounding inflammation seems to be rather the effect, than the cause of the sphacelus. Gangrenous excavations in the lungs constitute the ulcerous phthisis of Bayle*. The examples of this affection, recorded by Dr. Bright, merit particular attention†.

Treatment.

From the time of Hippocrates to the present day, pneumonitis has been considered as one of the disorders, in

Bleeding.

which the abstraction of blood is productive of the most unequivocal good effects. The same agreement, however, has not prevailed with respect to the quantity of blood to be drawn at one time, the period of the disease when blood-letting ceases to be useful, and the part of the body from which the blood ought to be taken. The greater number of the ancient physicians, as Laennec has remarked, bled only at the onset of the disease, and allowed the blood to flow, until syncope took place. The same practice is common in England, where physicians frequently direct twenty-four, thirty, or thirty-six ounces of blood to be

To be copious and prompt.

taken away in the beginning of pneumonitis. In subjects not debilitated by age, or previous habits and disease, Dr. Good, in the former editions of this work, recommended the "bleeding to be prompt and copious, at least to eighteen or twenty ounces, and, if necessary, to be repeated in twelve hours." M. Andral states, that the first bleeding should be from sixteen to eighteen ounces, and that the operation may be repeated twice, or even thrice, within the first twenty-four hours‡. The advantage of a very copious bleeding at the onset of pneumonia has been placed in a very strong light by Dr. Robertson§, whose practical observations on the subject merit attentive consideration, and whose precept is supported by Dr. Gregory's celebrated aphorism, that "the danger of a large bleeding is less, than the danger of the disease." However, notwithstanding the

* Recherches sur la Phthisie Pulmonaire. Paris, 1810.

† See Bright's Reports of Medical Cases, p. 136, et seq. 4to. Lond. 1827.

‡ Andral, Clinique Médicale, tom. ii. p. 379.

§ Edin. Med. and Surgical Journ. vol. x.

propriety of copious bleeding in the early stage of the generality of cases of pneumonia, the extent, to which the evacuation should be carried, ought certainly to be modified according to the age and strength of the patient. Hence, in the preceding editions, Dr. Good delivered the following caution:] The chief evil is that the fever is apt, at times, to run into a typhous form, and assume the second of the varieties before us. And hence, where there is any doubt upon the subject, local bleeding, is to be preferred, whether by leeches or cupping-glasses, repeated according as the evacuation appears to be demanded.

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Sometimes local only.

[This doctrine, that the fever of pneumonia is particularly apt to become typhoid, has always appeared to the editor one of doubtful validity. Having seen many cases of this disease in the public service, the experience, which he has had, makes him conclude, that the symptomatic fever of inflamed lungs is not more disposed to assume the character of typhus, than the fever resulting from the inflammation of other important viscera. The case, of which he speaks, however, is not to be confounded with other examples, in which the pneumonitis is only an incidental attendant on typhus, which is the primary affection. As Laennec justly observes, a copious bleeding in the beginning of the disease, reduces the inflammatory orgasm much more speedily, than repeated smaller venesections, and leaves less chance of a relapse. And, with respect to the fear of bleeding, derived from the consideration of debility and dreams of typhus, although the patient's state of health and strength should always be allowed to modify the practice, and even sometimes to prescribe local instead of general bleeding, the editor believes, that Diemerbroek's maxim, quoted by Dr. Forbes*, ought never to be forgotten, "præstat ægrum debilem sanari, quam fortem mori." And, as the latter physician inculcates, the vastly inferior power of bleeding in the second and third stages of pneumonitis, ought to make us principally depend upon what we can effect in the first stage. Indeed after the stage of hepatization, Lorinser† considers bleeding as use-

Bleeding.

* Laennec on Diseases of the Chest, &c. p. 241, note. 2d ed.

† Lorinser, Lehre von den Lungenkrankheiten, p. 259.

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less, if not injurious. In the beginning of the case, however, when the patient is young, strong, or plethoric, venesection, and local bleeding, by means of leeches or cupping, may be simultaneously practised.

Weak pulse not always a proof of weakness.

On this particular subject, one valuable caution is offered by Laennec, namely, that in pneumonitis, a weak pulse is not always a test of weakness: the feebleness, he says, is sometimes only apparent, and the pulse will become stronger and fuller after bleeding. For the removal of any doubt about the propriety of bleeding, when the pulse is weak, the stethoscope is mentioned as a most valuable instrument. According to Laennec, whenever the pulsations of the heart are proportionally much stronger, than those of the arteries, we may bleed without fear; but, if the heart and pulse are both weak, the practice generally causes complete prostration of strength.

Blisters.

Blisters are employed in pneumonitis by the generality of practitioners; but, with very little discrimination. The common error consists in applying them too early, in which circumstance, they increase the fever, and do more harm than good. The best physicians seem now to agree, that blisters should not immediately follow the first bleeding, but be kept back till the acute stage has somewhat subsided.

Aperients.

With respect to purgatives in cases of pneumonitis, glysters and gentle laxatives are generally preferable to stronger medicines. The editor has seen two cases very lately, in which the expectoration seemed to be stopped by the operation of active purgatives, and the patients, though already benefited by bleeding, suddenly became worse and died. As Dr. Forbes has observed, when pneumonia is complicated with gastric inflammation, strong purgatives are highly improper.

Refrigerants are frequently prescribed in this disease: one of the most common and useful is nitre;] which may be combined with the citrate of potash, or made to produce a more certain determination to the skin by the addition of camphor or of antimonial wine, or by a combination with the citrate or acetate of ammonia.

Emetics.

In other countries, emetics have seldom been given except in an early stage of the disease, and then only as a gentle puke; yet, from my own practice, I can recommend them when the disease has made a considerable advance:

but they must be used boldly, or so as to produce full vomiting, and the action of vomiting must be maintained for an hour, or even two: and in this way they will often produce a transfer of action of as beneficial a nature as the same process is found to do in purulent ophthalmy; and will, at the same time, peculiarly stimulate the exhalants of the lungs to an increased secretion of mucus. [On the continent, the free exhibition of tartarized antimony in pneumonitis has always had some partisans. To Laennec's knowledge, the practice was constantly followed by M. Dumangin, physician to La Charité, who scarcely ever joined blood-letting with it, and yet his practice was quite as successful as that of Corvisart, who bled much in this disease. Rasori, a modern Italian physician, first revived this method of treatment*. After venesection, Laennec gives a solution of one grain of tartarized antimony every two hours, repeating the dose six times. After this, if the symptoms be not urgent, and the patient disposed to sleep, he leaves him quiet for six or eight hours. But if the oppression be great, or the head affected, the medicine is continued, the dose being then sometimes increased to a grain and a half, or two grains, or even two grains and a half. Many patients bear the medicine without being either purged or affected with vomiting. Most of them, however, vomit two or three times, and have five or six stools the first day. On the following days, they have very slight evacuations, and sometimes none at all. As soon as some amendment is produced, we may be sure, says Laennec, that the continuation of the remedy will effect a cure, without any fresh relapse; a point, in which this practice is represented to differ especially from that of bleeding. Of forty-seven cases, treated by Dr. Hellis, of Rouen†, by repeated emetics, only five were lost, being a proportion somewhat less than one in nine. Laennec experienced even greater success with large doses of the medicine. The average number of deaths, under the treatment with bleeding and derivatives, is computed to be one in six or eight cases. When the medicine operates too

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Full vomiting.

Tartarized antimony.

* Storia della Febbre Petechiale, &c. Milano, 1813.

† Clinique Méd. de l'Hôtel Dieu de Rouen, 1826.

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freely, Laennec joins a small proportion of opium with it *.]

Peschier's antimonial plan.

M. Peschier of Geneva also prefers the treatment with tartarized antimony; and depends upon it alone or nearly so, even discarding the lancet; for he gives it in large doses, so as to purge as well as vomit. His usual quantity, at first, is, according to the age, from six or eight to fifteen grains dissolved in six ounces of water, which is taken in divided doses, in any diluting drink, in the course of twenty-four hours. And under this plan he tells us, that he cured all his patients, old or young, without exception. He admits, however, the conjoint use of blisters, which ought unquestionably to form a concomitant in the general plan; and the obstinacy of the cough may be alleviated by demulcents, or inhaling the steam of warm water. [The plan of making tartarized antimony the chief means of treatment has not yet gained many advocates in England. With Dr. John Forbes the belief of pneumonia being frequently complicated with gastric affections, influences him much against the practice, the merit of which, however, must be determined by experience.] Opiates have been tried in every form, but have never been found of decisive benefit: if opium be used at all, it should be in conjunction with gum-ammoniac or squills: but, upon the whole, either of these expectorants seem to answer best without opium. [The best, the easiest, and even the natural cure of peripneumony is expectoration, which ought to be encouraged by all the means in our power. It forms the *optima crisis* of Stoll, though, as he adds, a crisis too rarely obtained.] Dr. Saunders recommended the extract of the white poppy; and that of the garden-lettuce has since been tried, upon the recommendation of Dr. Duncan; others may have been more fortunate than myself, but, in my hands, both have proved altogether insignificant.

Demulcents.

Inhalations.

Opium rarely useful.

Extract of white poppy; and of the garden-lettuce.

Prognostics.

If the disease proceed favourably, the pulse becomes slower and softer; the yellow, tenacious, and perhaps bloody sputum, is mixed with points of a whiter matter, which increases with the amendment of every other symptom; for the cough is less violent and straining, the breathing freer, the skin moister, and the tongue cleaner

* See Laennec on Dis. of the Chest, p. 250, &c.

at the edges. If the progress be less favourable, the expectoration becomes darker and more viscid; the pulse lower, indistinct, and often intermitting; a low, wandering, delirium supervenes, with subsultus; and the patient dies, apparently suffocated from the oppressed vessels no longer permitting an expansion of the lungs. GEN. VII. SPEC. VII. α E. Pneumonitis vera.

When a salutary expectoration has commenced, it sometimes ceases suddenly, from some unknown cause, or some irregularity in the mode of treatment. This symptom is alarming; and every means should be instantly taken to bring the discharge back; such, particularly, as increased doses of the expectorants already noticed, to which may be added the steam of vinegar, alone, or impregnated with the essential oil of aromatic plants, as rosemary. And if a diarrhœa, which sometimes proves a very distressing concomitant, should supervene, it will be best relieved by the pulvis cretæ comp. cum opio. Accidental evils. How relieved.

Inflammation of the lungs is, also, occasionally found as a symptom or sequel in rheumatism, lyssa, or canine madness; various exanthems, as small-pox, measles, miliaria, and commonly in phthisis; in which last it has a very frequent tendency to suppuration, as we shall have to notice when treating of this distressing complaint. [Peripneumony, thus forming a combination with other disorders, is termed by Laennec latent and symptomatic, being then particularly liable to be overlooked. Besides the cases, just now specified, on which it is frequently an attendant, some others merit recollection: as, for instance, hæmoptysis; different kinds of catarrh; gout; severe erysipelas; violent continued fevers; and bad local injuries and important surgical operations.] Found occasionally in other disorders.

The MALIGNANT PERIPNEUMONY, contrary to the true or common inflammatory affection, is generally an epidemic, and may be easiest explained by describing it as an epidemic synochus or typhus occurring in such situations, at such seasons of the year, or in such a temperament of the atmosphere, as have a tendency to excite inflammation of the lungs. The debility is often so extreme from an early stage of the disease, that the pulse ceases on the pressure of the finger; and the vascular action is too weak to accomplish expectoration. It is supposed by many writers, and especially by Sarcone and Ludwig, to be a pulmonic ery- β E. Pneumonitis maligna. An epidemic synochus or typhus, with inflammation of the lungs.

GEN. VII. SPEC. VII. β E. Pneumonitis maligna.

sipelas, by which they mean an erysipelatous erythema. The symptoms are those already described, with a great addition of sensorial debility, and consequently with increased laboriousness of respiration. The disease is usually fatal on the fourth or fifth day; and if the system be incautiously lowered by venesection or a laxative of too much power, it often takes place earlier; and has sometimes occurred within twenty-four hours after bleeding.

The debility extreme.

By some called a pulmonic erysipelas.

Early fatality.

Treatment, as for typhus.

Local stimulants.

Bark not injurious to the breathing.

Our attention must here, therefore, be turned rather to the constitutional disease, than to the local affection; and the plan, recommended in typhus, is to be pursued on the present occasion: for it will be in vain to attempt expectoration under circumstances, in which the system will probably sink before the usual time arrives for effecting it. Camphor is here a medicine of considerable service, and may be used in conjunction with the aromatic confection, and wine in large quantities. It should be taken freely in the form of pills, rather than in that of julep: though both may be employed conjointly. Even the bark has a powerful claim to be tried, particularly the sulphate of quinine, as in putrid fever; nor has it been found to produce difficulty of breathing. Bark may be advantageously combined with the aromatic spirit of ammonia, which of itself often proves a useful stimulus. If evacuations be necessary, they should be obtained by injections alone. A light breathing perspiration, a free expuition, and a more animated appearance of the countenance, are among the most favourable diagnostics.

γ E. Pneumonitis notha.

Related to catarrh, and sometimes called catarrhus suffocativus:

by Frank, C. bronchiorum.

The SPURIOUS or BASTARD PERIPNEUMONY is usually allowed to offer another variety of this disease; and is described under the name of *peripneumonia notha* by Boerhaave, Coze, and Sydenham. It is, in many instances, little more than a severe catarrhal affection of the lungs, accompanied with great obstruction, occurring in habits of a peculiar kind; and is hence denominated by many authors *catarrhus suffocativus*, and by Professor Frank, catarrhus *bronchiorum**. It is characterized by great secretion and expectoration, with a mild cauma: and is chiefly found in those of advanced life, or who have weakened their constitution by excesses.

* De Cur. Hom. Morb. tom. ii. p. 138.

Gen. VII. Spec. VII. γ E. Pneumonitis notha.

Sydenham, however, has properly distinguished this malady from catarrh, notwithstanding the close resemblance it bears to it on particular occasions. The following is his description of the disease:—"The patient is hot and cold alternately, feels giddy, and complains of an acute pain in the head, especially when there is a teasing cough. He rejects all fluids, sometimes from paroxysms of coughing, and sometimes without: the urine is turbid, and of a deep red; the blood appears as in pleurisy. The patient breathes quick and with difficulty; complains of a general pain throughout the entire breast, and, as he coughs, discovers a wheezing to the attendants. The cheeks and eyes appear slightly inflamed; the pulse is small, often intermitting; and lying low, or on one side, is peculiarly distressing.

But judiciously distinguished from it by Sydenham.

Description.

Process of treatment.

As the fever is here of no great moment, we may, with considerable advantage, carry our local stimulants to a greater extent, and thus excite the lungs more actively to throw off the burden of mucus with which they are overpowered. Squills, gum-ammoniac, balsam of Peru, and even some of the turpentines, may be tried, and will mostly be found serviceable. The tetradynamia, as charlock, wild rocket, and mustards of various sorts; and the alliaceous plants, will form useful auxiliaries in the plan of diet. Blistering is highly serviceable; after which, as soon as the chest is a little unloaded, a regimen directly tonic should be commenced, by means of bitters, chalybeate waters, a moderate portion of wine, gentle exercise, pure air, and the irritation of an issue or seton; for a common result of this disease is hydrothorax. Perhaps, more persons fall a sacrifice to some sequel of the disease, than to the disease itself.

Expectorants.

Blistering.

Tonic regimen.

## SPECIES VIII.

## EMPRESMA PLEURITIS.

### *PLEURISY.*

ACUTE PAIN IN THE CHEST, INCREASED DURING INSPIRATION; DIFFICULTY OF LYING ON ONE SIDE; PULSE HARD; SHORT, DRY, DISTRESSING COUGH.

GEN. VII. SPE. VIII. Empresma pleuritis.

How distinguished from pneumonitis.

As the proper seat of the preceding species is in the substance of the lungs, or the pleuritic membrane that immediately covers their surface, or in both, the proper seat of the present is in the surrounding membranes of the pleura; and as these differ, the difference has laid some foundation for several varieties; of which the three following may be noticed, as matter of curiosity, though the sub-divisions lead to nothing of practical importance, as the causes are nearly alike, and the same mode of treatment is applicable to the whole.

| | |
|---|---|
| α Vera. True Pleurisy. | Fever a cauma: pain felt chiefly on one side: the inflammation commencing in that part of the pleura which lines the ribs. |
| β Mediastina. Pleurisy of the mediastinum. | Heavy pain in the middle of the sternum, descending towards its ensiform cartilage; with great anxiety; the inflammation from its symptoms being obviously seated in the mediastinum. |
| γ Diaphragmatica. Pleurisy of the diaphragm. | Painful constriction around the præcordia; small, quick, laborious breathing: manifesting that the inflammation is seated chiefly in the diaphragm. |

α E. Pleuritis vera.

We have already pointed out the distinction between true pleurisy and peripneumony; and observed, that, in

the former, the cough is dry and commonly without expectoration from the beginning to the end, contrary to what occurs in the latter; that the seat of pain is fixed, instead of shifting from side to side; and that the face is far less flushed and tumid. It must be conceded, however, to Dr. Cullen, who has treated of these affections under one common definition, that the general features of the two have a considerable resemblance; and, with the exception of expectorants, which in pleurisy are of little avail, the mode of treatment already proposed for the former disease, is the same that will be found necessary in the latter: the causes of both are alike, and as peripneumony rarely, though we have reason to believe sometimes, occurs without any degree of pleurisy, so it is commonly affirmed, that pleurisy rarely occurs without some degree of peripneumony; in both which cases it has been called a pleuro-peripneumonia. Gen. VII. Sp. VIII. a E. Pleuritis vera.

[With all the best informed practitioners of the present day, *pleurisy* always signifies inflammation of the pleura, whether attended with stitch, or pain in the side, or not; *peripneumony*, *pneumonia*, or *pneumonitis*, will always stand for inflammation of the lungs, even when accompanied, as it sometimes is, with acute pain in the side; while *pleuro-pneumonia* will mean the co-existence of inflammation in both organs. The observations of Laennec fully confirm the facts, that pleurisy and peripneumony are very frequently combined; that, in cases where the pleura alone is inflamed, the stitch of the side may be scarcely perceptible, quite transient, or entirely wanting; and, on the other hand, that a violent peripneumony, complicated with a slight pleurisy, may be attended with a most severe pain in the side*. The latter symptom is, therefore, not pathognomonic of pleuritis. Sometimes, though seldom, the pleura is inflamed on both sides the chest, so as to constitute what has been termed *double pleurisy*. It is indeed, as Laennec states, not uncommon to meet with slight degrees of pleurisy on both sides of the chest, produced a few hours before death in several acute and chronic diseases; or

Pleurisy and peripneumony often combined.

Pain in the side not pathognomonic of pleuritis.

* See Laennec on Diseases of the Chest, p. 420. 2nd edit.

GEN. VII. SP. VIII. α E. Pleuritis vera.

with a similar affection that has occurred on one side in the last hours of life, while the other side is violently inflamed. But it is extremely rare to see the pleura of both sides simultaneously attacked with violent inflammation, and abundant effusion; and, when such a case does occur, it is almost always speedily fatal.]

Like peripneumony, we also find the pleurisy an occasional symptom or result of typhus, catarrh, rheumatism, various exanthems, and hypertrophy or enlargement of the heart *. The pleurisy, however, that is supposed to accompany rheumatism, is often an inflammatory affection of the intercostal or other thoracic muscles alone, since the pain is confined to the origin and insertion of the muscles. Where this has been accurately attended to, it has been distinguished by the name of *bastard pleurisy*: and simply by that of *pleuritis* by Dr. Frank *, and those who have regarded genuine pleurisy as a mere modification of pneumonitis, or peripneumonia.

Description.

Like the preceding species, true pleurisy commences with the usual signs of a febrile attack, as chilliness or shivering, succeeded by heat and restlessness. The pain, or stitch in the side, is usually just above the short ribs, and the dyspnœa is characterized by the expirations being less painful, than the inspirations. The pulse is hard, strong, and frequent; and though the cough is mostly dry and suppressed, there is sometimes a bloody or puriform mucus spit up from the lungs. The patient generally lies most easily on the affected side, or the back, and cannot turn on the opposite side without a great increase of the difficulty of breathing. [As soon as effusion takes place, the natural sound of the chest on percussion is lost over the whole space occupied by the fluid; and, with the stethoscope, a total absence or great diminution of the respiratory sound, and the appearance, disappearance, and return of ægophonism will be detected. When the effusion is considerable, the respiration usually becomes *puerile* on the sound side, and the diseased side is larger than the other.]

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* Original Cases, with Dissections and Observations, &c. by John Forbes, M. D. p. 222. 8vo. 1824.

† De Cur. Hom. Morb. Epit. tom. ii. p. 126. 8vo. Mannh. 1792.

Like the preceding species, also, pleurisy terminates in resolution, suppuration, and gangrene, The former is the ordinary and most favourable issue. The last occurs rarely, and Laennec has seen only one instance of it from acute inflammation; but suppuration is by no means uncommon; in which case, if the abscess do not point outwardly, an empyema will necessarily follow; and the formation of pus is indicated by a remission of the pain, one or more shivering fits, and, in some instances, a sense of fluctuation. This, however, is a termination far more common to pleurisy from external injuries, than from internal causes.

Gen. VII. Sp. VIII. « E. Pleuritis vera. Termination.

[The pleura, when acutely inflamed, exhibits a punctuated redness, or an infinity of small bloody spots of very irregular figure. They occupy the whole thickness of the membrane, and leave small intermediate portions retaining the natural white colour. It cannot be doubted (says Laennec) that, during life, the redness was uniform; and that the punctuated appearance and partial whiteness are owing to changes which occur after death. Besides this particular redness, the superficial blood-vessels of the pleura are always redder and more distended, than in the natural state. Many consider a thickening of the pleura a very common result of its inflammation; but Laennec thinks that, in most cases where such thickening has been supposed to exist, the appearance was produced by an extensive congeries of miliary tubercles on the outer or inner surface of the pleura, a cartilaginous incrustation on the parts covered by it, or a layer of coagulating lymph on its internal surface. Inflammation of the pleura, he says, is always accompanied by an extravasation on its internal surface; the matter effused being either coagulating lymph, termed a *false membrane*, or else serosity, or a seropurulent fluid. The serous effusion is commonly of a light yellow colour and transparent, or with its transparency only slightly interrupted by the intermixture of small fragments of pus or lymph, so as to give it the appearance of unstrained whey. In acute pleurisy, it is mostly free from smell. Generally speaking, the more violent the inflammation, the more extensive and thick is the membranous exudation, or layer of coagulating lymph. On the contrary, in weak leuco-phlegmatic subjects, we find a great quantity of limpid serum, with a small portion of thin

Anatomical characters of pleuritis vera.

GEN. VII. SP. VIII. α E. Pleuritis vera.

membrane often floating in it. In such cases the pleurisy seems to pass insensibly into hydrothorax. In some rare instances we find a pseudo-membranous exudation, uniting the contiguous surfaces of the pleura, without any serous effusion. This, as Laennec observes, would be a very common case, if we took into our account those pleurisies which had made some progress towards a cure, the absorption of the fluid being the first step in the sanative process. But the less common examples, to which he alludes above, are noticed in persons dying of some other disease, and who were at the same time affected with a slight and partial pleurisy. In these cases, we find a white, almost colourless, semitransparent exudation, which, while recent, readily allows the parts to be separated, and remains on the surface of each, exactly like a thick and moist paste, which had united two leaves of paper.

Anatomical characters.

The pleura pulmonalis near the inflamed part is also sometimes covered to a small extent with a layer of lymph of various consistence and thickness. In some cases we find no serous effusion after death; and Laennec has met with similar examples of partial pleurisy, in which no extravasated fluid could be perceived with the stethoscope.

Sometimes no serum effused.

Many physicians imagine, that the effusion does not occur till after some time, and even some days. This opinion is pronounced by Laennec to be incorrect. He has several times observed all the physical signs of effusion, viz. ægophonism, and absence of the respiration and sound on percussion, in one hour from the first invasion of the disease, and he has seen the side manifestly dilated at the end of three hours.

Period of effusion.

The false membrane, or exudation of lymph, is gradually changed into cellular substance, or rather into a true serous tissue, like that of the pleura. The serous effusion is absorbed, the compressed lung expands, and the false membrane investing it and the costal pleura become united into one substance, which afterwards becomes vascular and organized, and constitutes permanent adhesions. A severe pleurisy, that has terminated by numerous adhesions, renders the part so affected much less liable to subsequent attacks of the same disease; and when it occurs, the inflammation and effusion do not extend to the adherent parts.

Adhesions.

When pleurisy is simple, the pulmonary tissue is free

from inflammation, even in the vicinity of the inflamed portions of the pleura; but it is rendered more dense and less crepitous from the compression of the effused fluid. If the extravasation has been very great, the lung becomes flattened and completely flaccid; it no longer contains air, or crepitates; its vessels are compressed and contain little blood; and the bronchiæ are rendered smaller. Yet there is no trace of obstruction as in pneumonitis; and if air is blown into the bronchiæ, the lungs expand *. When the effused fluid is tinged with blood, or, what is rare, contains coagula †, Laennec terms the disorder *acute hemorrhagic pleurisy*.

Gen. VII. Sp. VIII. a E. Pleuritis vera.

Effect of pleuritis on the lungs.

Among the occasional causes of pleurisy, enumerated by Laennec, are, inclemency of the winter; long exposure to cold after violent exercise; metastasis of gout, rheumatism, and cutaneous diseases; blows on the chest; and fracture of the ribs. Among predisposing causes, are, a slender frame, narrowness of the chest, the immoderate use of spirits, and tubercles in the lungs. In youth and middle life, plethora, violent exercise, intemperance, and cold, frequently bring on pleurisy; but, in old persons, and subjects of delicate constitution, who take great care of themselves, it is still more frequent. The worst cases, as Laennec truly remarks, occur in the weakest subjects, and in cachectic habits ‡.]

Causes of pleurisy.

Perhaps there is no disease, in which profuse bleeding from a large orifice may be so fully depended upon, or has been so generally acceded to by practitioners of all ages and all nations. The only question which has ever arisen upon the subject being, whether the blood should be taken from the side affected, or from the opposite. The earlier Greeks recommended the former, the Galenists and Arabians, the latter; and the dispute at one time rose so high, that the medical colleges themselves, not being able to determine the point, the authority of the emperor Charles IX. was whimsically appealed to; who, with much confusion to the controversy, died himself of a pleurisy before he had delivered his judgment.

Treatment. Bleeding should be copious.

Antiquated dispute from which side blood should be drawn.

Whimsical reference.

* See Laennec on Diseases of the Chest, p. 421, et seq. 2nd edit. by Forbes.

† See Case recorded by Andral, Clinique Méd. tom. ii. Obs. 15.

‡ Op. cit. p. 445. 2nd edit.

GEN. VII. SP. VIII. α E. Pleuritis vera.

He, too, had been bled, and his death was immediately ascribed to the blood having been drawn from the wrong side. At present, from a knowledge of the circulation of the blood, we can smile at these nugatory solemnities. It is possible, however, that there are some controversies of our own times that have as little groundwork, and at which future ages may smile with as much reason. The blood, drawn in this disease, has a peculiarly thick, yellowish, tenacious corium, and is hence specifically distinguished by the name of the pleuritic corium or coagulum.

Pleuritic corium.

Local bleeding.

[Should the pain and fever not yield to the first or second venesection, Laennec very properly recommends it to be followed up by local bleeding, preferring, however, cupping to leeches. As Dr. J. Forbes judiciously observes, one of the many practical advantages of accurate diagnosis in pleurisy and peripneumony, is the much greater benefit derived from local bleeding in the former, than in the latter disease. He believes we are accustomed to trust too much to general, and too little to local bleeding in this disease, and that both, combined in moderation, are greatly preferable to either in excess *.]

Purgatives.

Blistering.

Diaphoretics.

Purgatives should be used freely; blistering the side is very generally beneficial after bleeding has been tried and repeated, and should be accompanied with diluents and diaphoretics. [Blisters should not be applied in too early a stage, as they are then apt to increase the fever and pleuritic affection. In this disease, as well as in pneumomitis, Laennec prescribes tartarized antimony freely, and states that it speedily subdues the inflammatory action, and obviates the necessity of abstracting profuse quantities of blood.] Opium may also be employed with less caution than in peripneumony, and is a most valuable medicine joined with calomel, as recommended by Dr. R. Hamilton. For promoting the absorption of the effused fluid, the latter medicines, acetate of potass, digitalis, with mercurial inunction, and blisters, are the best means. When the accumulation increases, so as to form dropsy, paracentesis of the chest may become necessary.

Opiates.

* See note in his Transl. of Laennec, p. 479, 2d edit.

Gen VII. Sp. VIII. β E. Pleuritis mediastina.

The heart and pericardium are sometimes apt to associate in the morbid action, as well as the lungs themselves. This is particularly the case in the SECOND VARIETY. Dr. Perceval, in his manuscript commentary on the Nosology, has given me a striking example of this in a patient, who complained of excruciating pain in the region of the heart with dyspnœa, not at all relieved by copious and repeated bleedings. After death a slight effusion was discovered in the pericardium: but the mediastinum was more inflamed, than the membrane of the heart. The treatment of this variety ought not to differ from that of the preceding.

Case of Dr. Perceval of Dublin.

γ E. Pleuritis diaphragmatica.

Synonyms.

The cerebrum is, however, still more disposed to associate in the morbid chain of action, than the heart. And hence, when any of the varieties of pleuritis, and particularly the last, are combined with an affection of this organ, and produce delirium, the disorder was formerly distinguished by the terms paraphrenesis, and paraphrenitis; terms derived apparently from the peripatetic philosophy, which supposed the seat of the φρὴν, or soul, to be the præcordia; whence this region was denominated φρένες; while, as Hippocrates supposed its seat to be in the brain, phrenitis, with a lamentable confusion of terms, was, as we have already remarked, applied to an inflammation of this last organ, and continues to be very generally so applied in the present day.

Head most affected in this variety explained.

Description.

It is in the LAST VARIETY that the head is most commonly affected; probably from the general sympathy which the diaphragm holds with the lungs and the stomach, and the close community of action between both these organs and the brain. The breathing is here peculiarly distressing and anxious, the diaphragm being the muscle chiefly concerned in respiration, which now takes place without its aid. The hypochondria are drawn inwards and kept at rest as much as possible; the patient is tormented with hiccough and sickness; and there is a peculiar tendency to spasmodic action; whence the angles of the mouth are often involuntary retracted: there is a sardonic laugh on the countenance, a sense of tightness like the stricture of a cord at the præcordia, and convulsions wander from one part of the system to another. Professor Frank mentions a case, in which all these symptoms were present, and

Confounded with worms.

Gen. VII. Sp. VIII. γ E. Pleuritis diaphragmatica.

which was consequently supposed to be and was treated as a diaphragmatic pleurisy, but which on dissection, for it proved fatal, was ascertained to be a case of intestinal worms, the diaphragm showing no manifest affection. It is highly probable, however, that the diaphragm was here influenced by sympathy, and that the distinctive symptoms were the result of such irritation. The treatment should be as in the preceding varieties.

Treatment.

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## SPECIES IX.

## EMPRESMA CARDITIS.

### *INFLAMMATION OF THE HEART.*

PAIN IN THE REGION OF THE HEART, OFTEN PUNGENT; ANXIETY; PALPITATION; IRREGULAR PULSE.

Gen. VII. Spec. IX. Resembles the two preceding species.

THE symptoms in the definition sufficiently distinguish this species from the preceding. At the same time it must be acknowledged that carditis, like pleuritis, has many signs in common with pneumonitis; which may readily be conceived from the vicinity and close connexion of the thoracic viscera with each other, and particularly from the very strong sympathy with which, as already observed, they co-operate. Dr. Cullen affirms, indeed, that he has often met with cases of carditis evincing no other symptoms than those of pneumonitis, and Dr. Frank concurs in the same testimony. Vogel's definition is founded altogether upon this view, "Cordis inflammatio ferè ut in peripneumonia." I have hence been at some pains to draw a line of distinction; and I think it may be found in the symptoms now delivered as the specific character of the disease. We may add to these symptoms, that there is sometimes, though not always, great difficulty of breathing, generally some degree of cough but without expectoration, and a perpetual tendency to fainting; and that if deliquium take place, and the patient

do not soon recover from it, it proves fatal*. Portal asserts, that the organic pain is accompanied with an increase of heat, which often spreads to the surrounding regions. This is Portal's *acute* modification of the disease: but he also notices an *obscure* or latent modification, in which its symptoms are but little conspicuous, and whatever exists of them are ascribed to some other disease. The spirit, he tells us, is here suddenly subdued and broken: the pulse is slow, soft, and feeble: there is little pain in the heart, and little or no palpitation. Fainting, nevertheless, is a frequent appendage, and is peculiarly apt to lead astray. This, however, can hardly be called an idiopathic disease. Portal has drawn his description entirely from post-obit appearances in those who have died of severe atonic typhus, or of plague: and observing, as Chicoyneau had before him, occasional proofs of suppuration and gangrene of the heart, he has inferred the previous existence of carditis, and has ascribed the almost instantaneous sinking of the patient to a rapid march of inflammation in this organ, notwithstanding it was not manifestly accompanied with its ordinary indications†.

Gen. VII. Spec. IX. Empresma carditis.

Modifications of Portal.

[The obscurity in the diagnosis of pericarditis is still generally acknowledged. Dr. Ribes continues to assert, that it has no group of distinguishing symptoms. Sometimes, their assemblage would lead one to suspect an extravasation in the pericardium, and dissection afterwards reveals only a partial pleurisy, with matter effused exclusively in the pleura‡. Sometimes great dyspnœa, augmenting until death, with a regular pulse, and without pain, shall be the only sign of an affection of the pericardium, with fluid effused in its cavity§. In another instance, where a tuberculated state of the lungs is ascertained, and yet the respiration little oppressed, a severe dyspnœa suddenly comes on, and proves rapidly fatal: dissection disclosing a purulent collection in the peri-

Great variety and uncertainty of the symptoms.

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* Abercrombie, Contributions to the Pathology of the Heart. Trans. of the Medico-Chir. Soc. of Edin. vol. i. 1824.

† Mémoires sur la Nature et le Traitement de plusieurs Maladies. Par A. Portal, tom. 4me. 8vo. Paris, 1819.

‡ Andral, Clinique Médicale, tom. ii. p. 483. § Ibid. tom. iii. p. 438.

GEN. VII. SPEC. IX. Empresma carditis.

cardium *. There has been no pain; but aneurismal symptoms have occurred, which the post-obituary examination has not explained the cause of. Such is the influence of disease of the pericardium over the organ which it encloses, that it has occasioned appearances of complaints which had no existence; and the symptoms of chronic inflammation of the membrane may assume a form resembling that of organic disease of the heart. On other occasions, palpitations are the main effects, and the other local symptoms afford no information. In Andral's twelfth case, there was pain at the bottom of the sternum, and in the region of the heart; obscurity in the pulsations of this organ; but strength and regularity in the pulse: dissection showed a stratum of coagulating lymph in the pericardium; and what is most curious to remark is, that, several times in the course of the disease, the dyspnœa and general anxiety subsided with the pain †.

In the judgment of the editor, no modern pathologist has investigated the characteristic symptoms of pericarditis with so much discrimination and success as M. Louis. The cases which he witnessed and verified by dissection show, that the distinguishing symptoms, most to be depended upon, are, *a more or less acute pain in the præcordia, taking place suddenly; accompanied with oppression and palpitations in a greater or less degree; irregularity, or intermissions of the pulse, sooner or later followed by an obscure dull sound in the region of the heart on percussion, while the rest of the chest yields a clear resonation.* When all these symptoms, says M. Louis, are combined in a person previously well, the existence of pericarditis may be inferred. If the pain were absent, and the other symptoms occurred, the diagnosis, he thinks, would be hardly less clear; for the only doubt would be between pericarditis and hydrops pericardii, and this last disease is formed with less quickness, and without all the series of symptoms above detailed. In a chronic case, more difficulty would be experienced.

Symptoms most to be relied on.

The anasarca and coldness of the lower extremities, in

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* Ibid. Case following that last cited. See Andral, tom. iii. Obs. 9.

† F. Ribes de l'Anatomie Pathologique considérée dans ses vrais Rapports avec la Science des Maladies, tom. i. p. 88. Paris, 1828.

cases recorded by M. Louis, approximate them to other affections of the heart, and make an additional line of division between this disease and those of other organs *.] GEN. VII. SPEC. IX. Empreama carditis.

We are not in possession of any signs, by which an inflammation of the pericardium can be distinguished from that of the substance of the heart, for here the stethoscope affords little aid: and hence we cannot make a distinct species of the latter. Vogel and a few other writers have attempted it, but the boundary has not been clearly drawn, and has never been of use. No distinctive symptoms between inflammation of the heart and pericardium.

Upon dissection, adhesions have been occasionally found to a very considerable extent between the heart and pericardium, even where little inconvenience had been felt during life; from which we may, at least, collect, that the extent of motion of these two parts on each other is not very great. A purulent kind of fluid has at times also been detected on the outer surface of the heart, without the slightest appearance of ulceration either of the heart or pericardium; and as the same sort of secretion has often been traced, without ulceration in other cavities, Mr. Hewson, as we have already seen, first suspected, and Mr. Hunter afterwards endeavoured to establish, that this fluid is nothing more than coagulable lymph thrown forth from the vasa vasorum, but changed in its nature in consequence of passing through vessels in a state of inflammatory action. And it was this discovery, and the hint thus founded upon it, that gave rise to the doctrine now so generally admitted, and apparently so well sustained, of a distinct secretion of pus, in many cases without ulceration. Adhesions have been detected when little previous discomfort. And sometimes purulent fluid.

The causes of carditis are often obscure: where we can trace them, they are for the most part those of pneumonitis; and the mode of treatment needs not essentially vary. Dr. Frank gives an interesting case of violent carditis, brought on by terror in a prisoner condemned capitally. It proved fatal, but on dissection was found not to be confined to the heart. Causes and treatment.

[Inflammation of the heart appears to be a rare affection,

* P. C. Louis, Mém. Anat. Pathologique, p. 274. Paris, 1826. The observations on pericarditis are highly important.

GEN. VII. SPEC. IX. Empresma carditis.

and, as Laennec remarks, it is consequently very imperfectly known, both in a practical and pathological view. Our author enumerates merely some of the symptoms of pneumonitis, or pleurisy, joined with palpitation, irregularity of pulse, and tendency to fainting. Yet, these characters can hardly be received as pathognomonic; because, as Senac observes, they are extremely uncertain; and, with respect to palpitation, although its presence may lead us to suspect that the heart is affected, yet it is probably only an hypothetical opinion, since, in that inflammation which arises from wounds of the heart, palpitation does not occur*. What Corvisart describes as inflammation of the heart, seems to Laennec to have been in reality pericarditis, conjoined with a paleness, and sometimes also with softness of the substance of the heart†. Indeed, as Dr. J. Forbes remarks, carditis, properly so called, has been almost universally confounded with pericarditis. He has never seen an unequivocal case of inflammation of the muscular substance of the heart. Yet, he has no doubt of its occasional existence, from the statements of Dr. Baillie, and from ulcers and abscesses having been met with in that substance.]

Walls of the heart sometimes thickened.

There seems sometimes to be an increase in the action of the vessels of the heart, which, though short of inflammation, is sufficient to give thickness to its walls, and considerable magnitude to its general substance. And hence a frequent origin of enlargement of the heart. M. Bayle has published an interesting case, which appears to belong to this kind of morbid structure. The patient was a young man of delicate constitution, and limited intellect. He was attacked in 1819 with mental derangement; and, in a few months afterwards, seemed to labour under a general oppression in every organ, under which he died in a few days. The membranes of the brain were infiltrated and thickened: the heart was twice and a half its natural size: the aorta and pulmonary artery, as well as various other vessels, gave evident proof of a direct inflammatory action‡.

Exemplified.

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* Senac, Traité du Cœur, tom. ii. ch. vii.

† Laennec on Diseases of the Chest, p. 621.

‡ Observations d'Arterite. Bibliothèque Médicale. Sept. 1821.

[It is proved by dissection, that there is often a slow or chronic inflammation subsisting in a portion of the heart, which does not betray itself by any peculiar symptom. For abscesses in the substance of the ventricles, and ulcers on the external surface, have been occasionally found after death, when no symptoms of inflammation had previously existed *.] Gen. VII. Spec. IX. Empresma carditis.

## SPECIES X.

## EMPRESMA PERITONITIS.

### *INFLAMMATION OF THE PERITONÆUM.*

PAIN AND TENDERNESS OF THE ABDOMEN, ESPECIALLY ON PRESSURE, OR IN AN ERECT POSTURE; WITH LITTLE AFFECTION OF THE SUBJACENT VISCERA, OR ABDOMINAL WALLS.

THE inflammation may be seated in the peritonæal membrane lining the cavity of the abdomen, or in its extension to the mesentery or omentum. And hence Dr. Cullen has noticed the three first following varieties, [to which modern experience has added a fourth:] Gen. VII. Spec. X.

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| α Propria. Proper inflammation of the peritonæum. | The inflammation taking the general range of the peritonæum; pain extreme, often pungent, with little or no relief from stools. |
| β Omentalis. Inflammation of the omentum. | With a more sensible swelling in the region of the omentum. |
| γ Mesenterica. Mesenteric inflammation. | Pain more deeply seated, and more immediately in the mesenteric region: external tenderness less than in the preceding varieties. |

* Morgagni, Epist. XXV. art. XVII. Bonet, tom. i. p. 849.

GEN. VII. δ Chronica. Progress slow and insidious; pulse accelerated; little or no tension of the abdomen; sense of pricking, or slight tenderness in the belly; bowels generally costive, sometimes loose.

SPEC. X. Chronic peritonitis.

Noticed with singular brevity by Cullen:

It is singular that Dr. Cullen, after distinctly characterizing this species in his Nosology, and following it up into three sub-divisions, each of which, with him, forms a separate species, as the general disease does a genus, should take no other notice of the entire complaint in any form, except what is expressed in the following laconic remark: "Among the inflammations of the abdominal region, I have given a place in our Nosology to the peritonitis; comprehending under that title, not only the inflammations affecting the peritonæum lining the cavity of the abdomen, but also those affecting the extensions of this membrane in the omentum and mesentery. It is not, however, proposed to treat of them here, because it is very difficult to say by what symptoms they are always to be known; and further, because, when known, they do not require any remedies besides those of inflammation in general."

and more so than is expedient.

This remark is by far too sweeping. If the diseases referred to have no specific symptoms by which they can be known, they have no more claim to be admitted into a system of symptomatic nosology, than into a treatise of practice. Dr. Cullen is right in assigning them a place in the former; and he is, therefore, necessarily wrong in banishing them from the latter; and the more so, as the treatment ought, in some degree, to vary from that of enteritis, to which his general observation seems chiefly to refer.

a E. Perito-nitis puer-

The TRUE PERITONITIS occurs, as we have already observed, as a symptom in PUERPERAL FEVER; and as [illegible] have treated of it at some length under that disease, it [illegible] less necessary to be minute in our account at present. Puerperal fever, indeed, is sometimes, though not correctly, made a variety of PERITONITIS; for it is [illegible] of a peculiar kind, produced by peculiar causes,

and is only connected with peritonitis as the latter enters as a symptom into its general character, and may hence take the name of *puerperal* peritonitis, to distinguish it from *idiopathic*. GEN. VII. SPEC. X. « E. Peritonitis propria.

[Acute peritonitis generally begins, as Dr. Bateman has described it, with chills and shiverings, though these are occasionally slight, and sometimes not at all observable. The pulse becomes quick and frequent; there is considerable thirst; and the general affection, called fever, ensues. These symptoms are attended from the very beginning with a sense of heat and pain in the abdomen; at first, generally confined to one part, though sometimes more diffused. This pain is much increased by pressure; or, in other words, there is a great tenderness or soreness of the belly; but it is not accompanied by any inclination to go to stool. The pulse is at least 100 in a minute, and small; yet the tongue is not much altered at first from its natural appearance. Symptoms.

In the course of twenty-four hours, however, the pain and tenderness on pressure increase, so that sometimes even the weight of the bed-clothes becomes intolerable, and the pulse rises to 120 or 130 in a minute. At this time, the tongue begins to be covered with a cream-coloured mucus, and, though it is moist, there is great thirst. A considerable degree of tension and swelling now takes place over the whole abdomen, and the patient finds most relief from pain by remaining motionless upon the back, with the knees in a small degree elevated. The tension of the belly continues to increase to the sixth, seventh, or eighth day; on one of which days, unless proper measures have been taken to remove the disease, the patient most commonly expires. Previously to death, the pain often suddenly ceases, and the change may be mistaken for amendment; but, if the symptoms be minutely examined, the pulse will be found to be sinking and increasing in rapidity; the patient's strength is also sensibly diminished, the countenance collapses, cold clammy sweats break out, the extremities lose their warmth, and, at length, a laborious respiration manifests the concluding struggle of life.

A favourable prognosis, however, is to be deduced from a gradual cessation of the pain, especially when it is ac- Pro[illegible]

GEN. VII. SPEC. X. a E. Peritonitis propria.

companied by a diminution of tension and soreness, and when at the same time the pulse becomes fuller and less frequent, the skin less parched, soft, and moist, the respiration less laborious, and the countenance more open and expressive of ease.

Differences from colic and enteritis.

Inflammation of the peritonæum may be distinguished from colic by the permanency of the pain, and the frequency of the pulse, as well as by the tenderness on pressure, even before any tension of the abdomen has taken place; and by the absence of any inclination to go to stool, when the pain is severe. It is not so easily distinguished from inflammation of the bowels or enteritis. In this latter disease, however, there is obstinate constipation, and frequently vomiting; while the pain is more acute, and not so much aggravated by external pressure*.]

Whence the surrounding parts but little affected;

In the specific definition it is stated, that peritonitis occurs "with little affection of the subjacent viscera or abdominal walls." In effect, it often happens that these are not at all influenced, and, whenever they are, it is only secondarily; and hereby peritonitis is sufficiently distinguished from puerperal fever. "If the peritonæum," says Mr. Hunter, "which lines the cavity of the abdomen, inflames, its inflammation does not affect the parietes of the abdomen; or if the peritonæum covering any of the viscera is inflamed, it does not affect the viscera. Thus, the peritonæum shall be universally inflamed as in the puerperal fever, yet the parietes of the abdomen, and the proper coats of the intestines, shall not be affected: on the other hand, if the parietes of the abdomen, or the proper coats of the intestines are inflamed, the peritonæum shall not be affected†."

as explained by Mr. Hunter.

[The researches of Bichat into the tissues of which the various organs consist, confirm Mr. Hunter's opinion, that inflammation of the peritonæum may exist alone, and independent of the subjacent parts. In fact, the organs are composed of several tissues of different natures and structure, and their affections also differ according as this or that tissue happens to be primarily attacked; and the disorder never fixes on all the three coats of the

* See Bateman's art. PERITONITIS in Rees's Cyclopædia.
† On Blood, &c. p. 244.

stomach and bowels at once, but first begins in one of them. When the affection is acute, only a single tissue is generally found altered, the others continuing unchanged. GEN. VII. SPEC. X. « E. Peritonitis propria.

Not only may the peritonæum be inflamed, without the subjacent organs being similarly circumstanced, but such inflammation actually has no essential dependence upon or connexion with those organs. Hence the view sometimes adopted, of gastritis, enteritis, cystitis, &c. being an inflammation seated exclusively in different portions of the serous membrane, connected with the stomach, bowels, bladder, is erroneous, inasmuch as it is supposed that the cases depend upon the corresponding organs. Inflammation of the serous abdominal membrane is never exactly restricted to a single viscus, the surrounding portion of the membrane continuing healthy, but is propagated over a greater or less extent of the peritonæum *. Peritoneum sometimes alone inflamed.

Numerous dissections of persons destroyed by peritonitis prove, that the whole or only a part of the peritonæum may be inflamed, without the subjacent organs being concerned. In many instances, the muscular and mucous tissues of the stomach and intestines were found unaffected, even when gangrene had begun to show itself in the peritonæum. In general, the marks of inflammation are stronger, in proportion as the disorder is more advanced and violent. Sometimes the membrane seems as if it were very minutely injected; while, in other cases, as Bichat remarks, the redness is hardly discernible, the blood having escaped by the collateral vessels.

Bayle, Broussais, and others have seen as consequences of acute peritonitis: 1. Redness, thickening of the serous membrane, and here and there sloughs penetrating into the mucous coat. 2. A solid exudation of unorganized coagulating lymph, in the form of false membranes, uniting the surfaces of the peritonæum. 3. A fluid effusion, sometimes turbid, sometimes limpid or reddish. More or less of a sero-purulent fluid was almost always remarked on the surface of the intestines in various places. Broussais also noticed red coagula on the reddened and Morbid appearances after death

* See Bichat, Anat. Générale; Leçons d'Anat. Pathol. et Dict. des Sciences Méd. art. Péritonite.

GEN. VII. SPEC. X. α E. Peritonitis propria.

thickened peritonæum, unaccompanied with any fluid blood; masses of fibrin, destitute of the colouring particles of the blood; and, lastly, pure blood itself, when the effusion was considerable.

Most examples of peritonitis, terminating favourably, leave after them organized adhesions. In general, little gas is found in the bowels, and it is not to it, therefore, that the great distention of the abdomen, remarked before death, can be ascribed. One remarkable effect of inflammation of the peritonæum is to lessen its transparency, and render it even quite opaque.]

Substance of different organs not equally consenting with their surrounding membranes. Illustrated.

From what has been said, it appears that the membranous tunics of the different viscera do not, therefore, always hold an equal intimacy of action. And it would be interesting to follow up the discrepancy, and draw a scale of their readiness, or ineptitude, to sympathize with the viscera which they cover. The membranes of the brain, as we have already seen, are so peculiarly disposed to partake of the inflammatory action of the parenchyma, as to render solitary inflammation of the one or of the other a rare occurrence. In the lungs and in the heart the play of relationship is far less conspicuous, and in the viscera of the abdomen it rarely takes place. And it is owing to this circumstance, that we are able so generally to draw the line between inflammation of the peritonæum and of the intestines, from the pain being much more superficial in the former, than in the latter case, and, in many instances, not accompanied with sickness, or any other disturbance of the alvine canal. Portal is too little disposed to admit this distinction, and seems to think, that idiopathic inflammation of the peritonæum is by no means a common disease, and that, when it does exist, its manifestation is far from being clear*. But this is to render a general rule universal, and to sweep away from it the exceptions that chiefly establish its proof.

Objection of Portal.

Causes.

The causes are those of inflammation in general, as cold, external injuries, ulceration and rupture of some portion of the alimentary canal, and consequent extrava-

* Mém. sur la Nature et le Traitement des plusieurs Maladies, tom. iv. 8vo. Paris, 1819.

sation of the contents of the stomach or bowels*; and a morbid transfer of action; and, in a few cases, sympathy with the adjoining organs, as in puerperal fever. Gen. VII. Spec. X. a E. Peritonitis propria.

The treatment is, in like manner, that of inflammation in general, particularly that of E. ENTERITIS. Bleeding, both general and local, should be carried into effect copiously and with all possible speed; [nor should the practitioner be deterred from the use of the lancet by the seeming prostration of strength and feebleness of the pulse, which are not uncommon symptoms at the very onset of the disease, especially when the peritonæum of the stomach and bowels participates in the inflammation. Under such circumstances, bleeding will be followed by a rise in the pulse, diminution of the general weakness, and subsidence of pain†.] But purging, though at all times of service in inflammatory affections, is less imperiously demanded, than in inflammation of the intestines; except where the peritonis is puerperal, and the system affected generally: in which case, we have already observed, that calomel should be given liberally at the commencement of the complaint. [It should be understood, however, that the bowels should always be kept open, and that this should be effected with as little irritation as possible. In ordinary cases, castor oil, small doses of sulphate of magnesia, and emollient clysters, are the most proper means for this purpose.] Warm stimulant fomentations may be advantageously applied to the abdomen, and blisters in succession. [The application of a blister should be deferred till the constitutional effects, produced by the inflammation, are partly removed by bleeding.] After a very free use of leeches, I have found more benefit in applying a large folded flannel wrung out in simple hot water, or water impregnated with aromatic herbs, over the whole of the abdomen, and letting it remain there for many hours or till dry, wrapped over with a broad calico or flannel swathe that surrounds the entire body. All we can possibly aim at, in applications of this kind, is a continuation of moist warmth, as in a

Treatment. Bleeding. Purging. Blisters. Fomentations.

* See Abercrombie on Pathology of the Stomach, &c. Edin. Med. Journ. No. 78; Dr. Crampton and B. Travers in Med.-Chir. Trans. vol. viii.; Louis in Archives Gén. de Méd. Jan. 1823.

† See Pemberton on Diseases of the Abdominal Viscera, chap. i.

GEN. VII. SPEC. X. α E. Peritonitis propria.

common poultice; and this is obtained more easily, and with infinitely less fatigue to the patient or danger of giving him cold, than in the ordinary way of applying fomentations. When the bowels have been well opened, opiates may be given with freedom, and especially in union with ipecacuan or antimonials to determine to the surface.

Treatment.

β E. Peritonitis omentalis.

When the INFLAMMATION commences or is seated IN THE OMENTUM or EPIPLOON, the pain is more limited, and points rather towards the superior and middle region of the abdomen, a little above and below the navel; though it sometimes inclines to the right or left hypochondrium.

Does not readily suppurate.

The peritonæum itself does not readily pass into a secretion of genuine pus; and still less so the omentum, which, where ulceration takes place, generally evinces a foul and sanious secretion.

Illustrated from Sauvages.

Sauvages gives a striking example of this in a woman, who was at first attacked with an acute lancinating pain in the umbilical region; and had a tumour formed towards the right hypochondrium about the size of a man's fist, which by degrees occupied the whole abdomen. By an application of emollient cataplasms, the pain and general swelling were diminished in the course of three days; but a fluctuation in the abdomen was next detected, like that of an ascites; in consequence of which, a trochar was introduced into both sides of the abdomen, and a putrid ichorous fluid was discharged, which induced the operator to enlarge the opening; when sloughs of the omentum, already separated, came away with an intolerable stench, and with about two pounds of what Sauvages calls ichorous water. But the skill of the surgeon was overpowered by the disease, and the patient fell a victim to it *.

γ E. Peritonitis mesenterica.

The mesentery has but a small degree of sensibility, and hence, as well as from the greater depth of the seat of the disease, MESENTERIC INFLAMMATION is only discoverable by pressure. If the affection be strictly mesenteric, the symptoms are mild and gentle; but this is a rare case, and chiefly occurs when the glands are obstructed, and any accidental irritation is applied to them.

Mostly complicated with other complaints.

Most commonly it is catenated with inflammation of the spleen, liver, or

* Nosol. Med. Class. III. Ord. III. XVI.

intestines. The chief point of tenderness or pressure is the navel; though in the commencement of the disease the pain seems to shoot upwards from the back; the bowels are often obstinately confined *. Gen. VII. Spec. X. γ E. Peritonitis mesenterica.

The medical treatment will be the same as in HEPATITIS, or SPLENITIS: though bleeding, in general, effects but little benefit. Treatment.

[It is to Dr. Pemberton and M. Broussais that the profession is indebted for the best descriptions of chronic peritonitis. The disease advances very slowly and insidiously, manifesting itself only by occasional superficial pricking pains over the abdomen, without the patient feeling any inclination to go to stool; or, as Broussais says, by a sort of constant sensibility in the abdomen, often not distinguishable but by the touch. The pulse is somewhat accelerated, with considerable thirst, white tongue in the morning, and a pallid doughy countenance. There is no tension of the abdomen, as in the acute species; on the contrary, the skin and abdominal muscles seem to sit loosely upon the peritonæum, which feels like a tight bandage underneath them; or, as Broussais states, the abdomen is slightly swelled, and elastic, which symptom increases towards the evening. The appetite and digestion often remain undisturbed; but, in other instances, there are vomitings, which Broussais suspected to happen chiefly when the peritonæal coat of the stomach was affected. The same writer also speaks of the feeling of a ball moving about in the belly, and tending towards the throat; referred by him to the mass formed by the agglutination of the bowels and thickened mesentery, moveable in the effused fluid. δ E. Peritonitis chronica. Symptoms.

In time, the bowels become agglutinated together, or fluid is effused so as to produce dropsy. The symptoms are all equivocal, and not one of them pathognomonic. The disease is sometimes the result of protracted acute peritonitis. Old age; a delicate feeble constitution; occupations confining the abdomen in an habitual state of compression; unhealthy damp, cold stations; and the rigor of intermittent fever, according to Broussais, are among the chief causes of chronic peritonitis.

By Broussais, chronic inflammation of the peritonæum is

* J. P. Frank, De Cur. Hom. Morb. Epit. tom. ii. p. 188. 8vo. Mannh. 1792.

GEN. VII. SPEC. X. } E. Peritonitis chronica.

regarded as inevitably fatal. The treatment, therefore, in his view can only be palliative. When any degree of active peritonitis is suspected to prevail, he recommends antiphlogistic remedies, and moderate stimulation of the skin.

Treatment.

But when there is no pain, and the symptoms are less marked, he recommends blisters, sudorifics, and the tincture of squills and cantharides, with a nourishing diet. Emetics and purgatives he considers useful only when some incidental complication calls for them.

On the other hand, Dr. Pemberton's treatment consists in the prohibition of animal food and fermented liquors, and keeping the patient strictly on milk and vegetable diet, with small bleedings once or twice a week, generally by leeches or cupping. The bowels are to be kept open with small doses of sulphate of magnesia, or castor oil. Dr. Pemberton differs from Broussais in not regarding chronic peritonitis as totally incapable of cure.]

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## SPECIES XI.

## EMPRESMA GASTRITIS.

### *INFLAMMATION OF THE STOMACH.*

BURNING PAIN AT THE PIT OF THE STOMACH, INCREASED ON SWALLOWING; REJECTION OF EVERY THING; HICCOUGH; EMACIATION; OPPRESSION AND DEJECTION OF MIND; FEVER A SYNOCHUS.

GEN. VII. SPEC. XI. Hypothesis of Broussais.

IF to this species we add the ensuing, or EMPRESMA ENTERITIS, we shall have a general type of fever, according to the doctrine of M. Broussais, and that which is commonly received in the present day throughout France: for we have already observed, that this celebrated teacher regards fevers of all kinds as an inflammatory affection of some part or other of the alimentary canal; or, to give a close copy of his own words, "all the ESSENTIAL fevers of authors," says he, "may be referred to *gastro-enteritis*, simple or complicated; and all the acute examples of this inflammation, in its aggravated form, proceed to stupor,

All essential fevers forms of gastro-enteritis.

typhomania (*fuligo*), lividity, fetidity, and prostration; and represent what have been called typhus, putrid or adynamic fever, or those in which the irritation of the brain is considerable, whether it amount to inflammation or not, whether it produce delirium, convulsions, &c., or take the name of malignant, nervous, or ataxic fevers *."

Gen. VII. Spec. XI. Empresma gastritis.

Having already entered into the question, whether fever be essentially dependent upon inflammation of any particular organ, as the head, the alimentary canal, the liver, or the pancreas, for all have had their respective advocates, and having pointed out the pathognomonic distinctions between idiopathic fever and organic inflammations, it is not necessary to return to any detailed consideration of this subject. But we ought to add, that there seems more foundation for M. Broussais's opinion in France, than perhaps in any other country; since inflammatory affections of the alimentary canal, in some part or other of its length, or under some modification or other, often indeed accompanied with ulceration, appears to be more common in Paris, than in any other town or region in Europe, or perhaps in the world. To what cause this is owing has not been very clearly pointed out; the diet is perhaps chiefly concerned; the water has also been denounced; but there are various auxiliaries, which are not so easily detected.

This subject already examined.

Origin of Broussais's hypothesis.

The frequency of gastritis and similar inflammations at Paris as combined with fever.

The cause not accurately known.

The fact however admits of no question: for the observations of MM. Prost, Petit, Serres, and others concur in proving, that by far the greater number of febrile attacks in France, whether sporadic or epidemic, are combined with some modification of gastritis or enteritis, and very generally show symptoms of diarrhœa and dysentery. But that, even in Paris itself, idiopathic fever and inflammation of the alimentary canal are distinct diseases, has been sufficiently established of late by the valuable post-obit examinations of M. Andral; which have been conducted upon a very extensive scale for the express purpose of settling this disputed question. This excellent and indefatigable investigator was selected by M. Lerminier, physician to the hospital of La Charité, for the purpose of providing cases and dissections for a valuable system of Clinical Medicine,

But the fact concurrently proved.

But even at Paris fever demonstratively shown to be distinct from inflammations of the alimentary canal: especially by Andral.

Facts relative to the question ascertained by him.

* Examen des Doctrines Médicales et des Systèmes de Nosologie, &c. Par J. F. V. Broussais, Prof. de Med. CXXXVIII. CXXXIX.

GEN. VII. SPEC. XI. Empresma gastritis.

that has now been in part published. In pursuit of this branch of study, he has been particularly attentive to the state of the alimentary canal through its whole course in patients who have died of fevers of almost every type and modification; and he has found, that although, as already observed, this organ, in some part or other, has often given proof of inflammatory action, yet that, occasionally, there has been no such effect whatever, and very frequently none sufficiently violent or extensive to become the cause of dissolution, or even of any serious evil to the living frame. In thirty-eight individuals, eleven only presented traces of gastric inflammation, sufficiently distinct to warrant the opinion, that they had influenced the symptoms observed during life. In thirty persons, red patches, eruptions, or ulcers were found in the small intestine; but in fourteen only did these lesions appear to bear any proportion to the severity of the symptoms. In the great intestine the alterations were more rare, and less vehement, than in any other portion of the canal.

Comparative table of patients in fever; locally affected much: little, or scarcely at all.

On comparing the lesions, observed in the three great divisions of the canal, the following results were obtained. In five patients, the entire tube was exempt from every lesion of consequence. In seven others, they appeared too inconsiderable to exercise any influence on the state of the disease. And where the affection was more strictly and manifestly inflammatory, the effects were extremely diversified. In some cases were found eruptions of varied form and character, occasionally running into ulceration. In other cases, the mucous membrane was studded with large patches of inflammation, and the subjacent cellular tissue was advancing to a gangrenous state. In several instances, the ulcers were detached and assumed a carbuncular appearance *.

Character of the inflammation diversified.

General result.

In most of these examples, there can be no question of the existence of idiopathic gastritis or enteritis: but the simple fact of the existence of numerous instances of fever, and fever too so violent as to prove fatal, without any such accompaniments, together with the certainty, that inflammation and even gangrene of particular parts of the alimentary canal are, in numerous instances, effects instead of causes of fever, are a sufficient ground for regarding fever

* Apdral, Clinique Médicale, t. i. Paris, 8vo. 1823.

and inflammation either of this or any other kind as distinct diseases, and prove a complete subversion of Broussais's hypothesis. Gen. VII. Spec. XI. Empresma gastritis.

Inflammation of the stomach may be either of the adhesive or the erythematic character; the latter is the more common*; and the species hence offers us two varieties with considerably different symptoms; which are chiefly, indeed, the result of the peculiar nature of the fever that accompanies this inflammation, already stated to be a synochus, or fever commencing with caumatic, but terminating in typhous, symptoms. For this kind of fever it is not difficult to account. We have often had occasion to state, that the stomach is the common centre of sympathy; it is also an organ of acute sensibility; and it is hence impossible for it to suffer from inflammatory action without suffering severely, and without extending its effects very widely. Fever different according to the different nature of the inflammation.

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| α Adhæsiva. Adhesive inflammation of the stomach. | The pain very acute; the fever violent. |
| β Erythematica. Erythematic inflammation of the stomach. | With an erythematous blush, extending to and visible in the fauces; pain more moderate; fever less violent; pulse low and quick. |

Dr. Cullen seems to have been the first writer that distinctly pointed out the nature of these two varieties, which he has unnecessarily advanced to the rank of species, and later writers have justified the expediency of a distinction. This distinction, as already remarked, is produced by the nature of the accompanying fever; and, consequently, in a considerable degree, by the nature of the constitution in which the disease occurs. The fever is perhaps in every instance a synochus, the cause of which we have just stated; but, while in a firm and robust habit the febrile course has, comparatively, but little tendency to pass from the entonic action with which it commences, into a dangerous languor and atony, in relaxed and irritable habits it is apt to run into this stage almost from the first, and the synochus degenerates rapidly into a typhoid character. General remarks and pathology.

* J. P. Frank, De Cur. Hom. Morb. Epit. tom. ii. p. 250.

GEN. VII. SPEC. XI. Empresma gastritis.

General causes.

In both varieties the causes are alike; as external or internal cold suddenly applied in a heated state of the stomach, acrid substances, or excess in eating. The acrid substances, chiefly recorded, are jalap and other drastic purgatives taken in excess; sulphuric acid; corrosive sublimate; and very large doses of nitre, or quantities swallowed by mistake, as an ounce, or an ounce and a half, of both which we have an example in the Journal de Médecine*. It is also said to have sometimes been produced by a severe paroxysm of cololithus †; and occasionally to have followed upon *trichosis Plica*, the matted hair of Poland ‡. A sudden chill, from swallowing cold water or some other fluid when the body is heated, is a frequent cause: as is also repelled gout, indigestible food, and especially ardent spirits drunk profusely.

Diagnostics.

The symptoms are sufficiently detailed in the specific definition. Several of them are those of cardialgia; but, in the latter, there is neither fever, nor vomiting. The most decisive signs are a permanent local pain, and general emaciation; and these, as M. Chardel has justly observed §, increase with the prolongation of the disease, till both become extreme, and even opium will scarcely relieve the former, in whatever quantity administered. In a few cases, the food is not rejected for several days; and as the bowels are constipated, and the digestion is imperfect, it remains in the stomach, and forms a tumour sensible to the pressure of the hand, which, upon rejection, disappears. The presence of this tumour is peculiarly characteristic of an inflamed state of the pylorus, as its absence is of the same state of the cardia; for, in this last case, the contraction of the cardia renders deglutition extremely difficult, and the food is for the most part rejected without reaching the stomach. From the close sympathy of the stomach with other organs, the disease has sometimes been accompanied with delirium, and in a few instances with hydrophobia. Where the inflammation is violent, it destroys in a few days. If no fatal symptom occur within the first

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* Laflize, tom. lxxi. Souville, tom. lxxiii.

† Caltschmied. Pr. de Ægro inflammatione ventriculi demortuo calculis, &c. Jen. 1757.

‡ De la Fontaine, Chirurg. Méd.

§ Monographie des Degénérations Schirreuses de l'Estomac. 8vo. Paris, 1808.

week, it terminates for the most part favourably. Shiverings and a remission of pain are, as usual, marks of suppuration. GEN. VII. SPEC. XI.

Of the ADHESIVE VARIETY Mr. Cruikshank has given a good illustration in the case of a young lady who died after two or three days' illness, before which she had been in perfect health. "I was called in," says he, "but she was dead before I got to the house. From her history I was at a loss to account for her death: but, on opening the abdomen a day or two after, I found the contents of the stomach in that cavity; that they had produced peritonæal inflammation, and killed. On examining the stomach, I found a hole in it large enough to admit the end of my finger. This hole had been formed by absorption of part of the substance of the stomach from scrofulous ulceration: its edges had adhered by inflammation to the under surface of the small lobe of the liver. This inflammation was evidently raised by the powers of the body to prevent the accident which happened: and if no violent vomiting had taken place, and torn this adhesion at this particular time, she might have lived for years notwithstanding the ulcer*." a E. Gastritis adhæsiva. Illustrated.

In many cases of this kind, the inflammation is chronic and indeed of long standing; for the diseased parts of the stomach exhibit great thickening and induration. Where the inflammatory action proceeds very slowly, it is often astonishing to find how little the general health, or even the local state of the stomach, is disturbed. For, as in the case before us, it proceeds without being suspected till the ulcer is complete, the external tunic gives way, and the contents of the stomach are evacuated; which irritate, as a foreign body, in whatever situation they are lodged, excite a new and active inflammation, and destroy in a few days. This indeed is the usual termination, whatever be the progress. Yet the march of the disease is not always thus quiet or deceitful; for it is often preceded by many or all the ordinary concomitants of dyspepsy, as acidity, eructations, flatulency, and oppression of the stomach after eating; often indeed accompanied with emaciation and de- Inflammation often chronic and slow. Progress of this modification.

* Anatomy of the Absorbent Vessels, p. 122.

GEN. VII. SPEC. XI. a E. Gastritis adhæsiva.

bility, and not unfrequently with hæmatemesis; by which last signs it is chiefly to be distinguished from idiopathic indigestion. The death however is commonly sudden, within a day or two, or even a few hours, from the cause just stated. M. Chardel* has given various examples of this form. M. Gerard† and Dr. Abercrombie‡ others.

[It is correctly observed by the latter writer, that acute inflammation of the stomach is not a common disease in this country; and when it does occur, the symptoms are so severe and well defined, as immediately to indicate the nature of the affection. But the stomach is liable to inflammatory action in a chronic form, which often advances so slowly and insidiously, that the dangerous nature of it may be overlooked, until it reaches that stage in which it assumes the characters of organic and hopeless disease. In the early stage, the prominent symptoms, in fact, merely indicate derangement of the functions of the stomach, and are consequently very apt to be included under the general term dyspepsia.]

Remedial process.

Gastritis in its ACUTE form has often been represented in a more dangerous light than it deserves to be; for in neither variety under this modification is it frequently attended with fatal effects under judicious treatment. In the true adhesive form, copious and repeated venesections have been very generally recommended, and have often been found of the highest advantage, particularly in robust and vigorous habits. To be, however, of any decided avail, this plan of treatment should be commenced early; for the fever is so apt to pass into a typhoid form, that, after the first two or three days, too much inroad will generally have been made upon the constitutional strength to allow the use of the lancet. If acrid poisons, or excess of eating, be the cause, an emetic should be administered; but otherwise this, as well as all other stimulants, should be avoided. Gentle cooling laxatives, a blister applied to the pit of the stomach, mild nutritive drinks, nutritious injections, and, if the pain or sickness be extreme, doses of a drachm of the

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* Monographie des Dégénerations Scirrheuses de l'Estomac. 8vo. Paris, 1808.
† Des Perforations Spontanées de l'Estomac.
‡ Edin. Med. and Surg. Journ. vol. xxi. p. 1.

syrup of white poppies, and perhaps about five grains of nitre in an emulsion of gum arabic or spermaceti, will generally be found the most successful plan. It is, however, extremely difficult to get any medicine to remain on the stomach; and hence the best preparation is that of pills. [In idiopathic inflammation of the internal surface of the stomach, or when that surface becomes inflamed in the progress of dysentery, gout, or other diseases, Dr. Cheyne has often directed entire abstinence from medicine of every description, and from fluids even of the blandest nature, until the inflammation has been removed by bleeding, blistering, fomentations, &c. The inflamed stomach, he observes, is often incapable of retaining even a spoonful of water, and, at first, every description of medicine produces an aggravation of sickness, vomiting, and general distress. After one or two days, calomel, in doses of one grain, may be repeated every hour, or four or five grains and half a grain of opium given every third, or fourth hour, alternating these medicines with a solution of Rochelle salts, and soda, to which lemon juice may be added. But before these remedies be employed, he particularly enjoins a previous reduction of the inflammation *.] If gangrene take place, all further exertion will be in vain: and we may determine its presence by a sudden cessation of pain, coldness about the præcordia, and languid or intermitting pulse, which are its sure attendants. Under the chronic form we have just noticed, Dr. Abercrombie has found sulphate of iron, in the proportion of two or three grains three times a day, a valuable and decisive remedy, and it is well entitled to attention †.

Gen. VII. Spec. XI. α E. Gastritis adhæsiva.

Upon the ERYTHEMATIC VARIETY the following remarks of Mr. Hunter are too valuable to be omitted: and they are the more valuable as they apply to disorders of other internal cavities besides the stomach. "There is," says he, "an inflammation which attacks internal canals, which is classed with the erysipelatous; but how far it is the same I do not know. It is certainly not the suppurative. Whatever it is, it may be considered in some of its effects to be in direct opposition to the adhesive and sup-

β E. Gastritis erythematica. Explained by Mr. Hunter.

* See Dublin Hospital Reports, vol. iv. p. 266.

† Ut suprà.

GEN. VII. SPEC. XI. β E. Gastritis erythematica.

purative inflammations: for where the adhesive most readily produces adhesions, there the erysipelatous does not, as in the common cellular membrane; and where the adhesive seldom takes place, excepting from extreme violence, there this inflammation (if erysipelatous) has a tendency to produce adhesions, as in canals or outlets. It also opposes, in some degree, the suppurative, in being backward in producing suppuration even in those places where suppuration most readily takes place, such as canals and outlets; for there, as above observed, it more readily throws out the coagulating lymph. Whatever the inflammation may be, it is certainly attended with nearly the same kind of constitutional affection. The fever in both appears to be the same, viz. accompanied with debility, languor, &c.*"

Diagnostics.

The erythematic inflammation of the stomach comes on more insidiously than the adhesive; and is best characterised by the inflammatory colour of the fauces, for it usually spreads to these, and the lowness and rapidity of the pulse. The inflammation often extends through a great part of the alvine canal as well as the œsophagus; and, after a subsidence of the sickness, produces diarrhœa, and mucous discharges from the bowels. It is sometimes so gradual and tardy in its progress, as to produce little fever, or even local disturbance, for many days or even weeks.

Remedial process.

If this variety of gastritis be excited by acrid or poisonous substances, the stomach-pump should be used, or a brisk emetic be exhibited with as much speed as possible; and afterwards such antidote as the character of the poison may point out: opposing acids to alkalines, and alkalines to acid erosives, and the most active stimulants to narcotics. When the cause is internal, mild, diluent, and cooling drinks are to be employed freely. The infusion of roses will often prove one of the most serviceable medicines we can make use of; blisters should be applied and repeated, and the bowels kept open with laxative clysters.

Inflammation of the stomach is also found in the one or

* On Blood, &c. p. 270.

the other of its varieties, as an occasional symptom in aphtha, measles, small-pox, and other exanthems; and, perhaps, in repelled herpes, scabies, and similar eruptions. Gen. VII. Spec. XI. β E. Gastritis erythematica.

We may here observe, that the PANCREAS is also sometimes, though rarely, affected with inflammatory action; and that in this case the symptoms are a combination of Empresma gastritis and E. hepatitis. There is pain and distention in the epigastrium, with frequent vomiting. There is also a defined tumour seated higher than the liver, and generally more polarized, but always accompanied with some degree of jaundice from its pressure on the bile-ducts. The affection often yields to depletion by cupping, brisk purgatives, and blistering *. Inflammation of the pancreas.

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## SPECIES XII.

## EMPRESMA ENTERITIS.

### *INFLAMMATION OF THE BOWELS.*

GRIPING PAIN IN THE BELLY; TENDERNESS, AND VOMITING; FEVER A SYNOCHUS.

In inflammation of the stomach, the pain is seated higher, and is rather burning than griping; this last, also, has usually some degree of hiccough, and great dejection of mind: neither of which belongs to inflammation of the intestines; and it is by these characters, that the two are to be distinguished from each other. Stoll adds, that intestinal inflammation is also accompanied with a suppression of urine: but we cannot rely upon this as a specific symptom. Gen. VII. Spec. XII. How distinguished from gastritis.

Our opening remarks upon gastritis, in respect to the

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* Perceval, in Trans. King's and Queen's College, Dublin, vol. ii. p. 128. 1824. To all who desire a very correct knowledge of affections of the mucous membrane of the stomach, the editor strongly recommends the Memoir by M. Louis, entitled "Du Ramollissement, &c. de Membrane Muqueuse de l'Estomac." Mém. Anat. Pathol. Paris, 1826.

GEN. VII. SPEC. XII. Empresma enteritis.

nature of that disease in France, apply to the present as well. Enteritis, also, exhibits two varieties:

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|---|---|
| α Adhæsiva. Adhesive inflammation of the bowels. | Pain very acute; fever violent; vomiting frequent; and costiveness obstinate. |
| β Erythematica. Erythematic inflammation of the bowels. | Pain more moderate; fever less violent; little vomiting; and diarrhœa instead of costiveness. |

Of these varieties, the former is more frequent in this species, as the latter is in the preceding*.

Why accompanied by a synochus.

The causes of both, as also of the accompanying fever, being a synochus, may be understood from the remarks already offered upon gastritis; the intestines partaking in a very considerable degree of the character of the stomach.

[Medical writers do not always agree respecting the meaning of the term *enteritis*. Some imply by it an inflammation of the several membranes which form the intestinal canal, thus confounding peritonitis with enteritis; while others signify, by the latter word, an inflammation of the mucous membrane that invests the bowels from the pylorus to the anus. The latter meaning is probably the most correct, as founded on the difference of functions, essentially distinguishing the mucous membranes from the peritonæum. The inflammation, however, sometimes extends from the mucous coat to the others, so as to affect the whole thickness of the intestines. The inflammation may also be either acute or chronic†.]

General causes.

To the causes, enumerated under gastritis, may be added some natural or accidental organic mischief in some part or other of the intestinal canal, as ventral, inguinal, or other hernias, or introsusceptions of various kinds; or infarctions from coprostasis, scybala, or enterolithus. The plica polonica, or matted hair, is said by De la Fontaine to be a cause of this species, as other writers affirm it to be of gastritis.

The progress of the FIRST VARIETY usually commences

* Frank, ut suprà, tom. ii. § CCXXXVIII. p. 250.

† See Dict. des Sciences Méd. t. xii. p. 359.

with a sense of coldness or shivering, and an uneasiness in some part of the belly, at first remitting or intermitting, but gradually acquiring permanency, and rising into an acute pain. The pain now spreads over the whole abdomen, which is tense and tender to the touch, though less so than in peritonitis; there is great flatulency, accompanied with occasional spasms that shoot backward to the loins, usually obstinate costiveness, and unconquerable vomiting, though sometimes diarrhœa and tenesmus. The pulse is small, hard, and frequent, but has sometimes been soft; the tongue dry; thirst extreme; urine high-coloured, small in quantity, and discharged with difficulty; the breathing is laborious; and from the contraction of the abdominal muscles, the patient is perpetually bending forward*. If no beneficial change take place, all these symptoms become aggravated; instead of feculent stools, there is an ineffectual straining, with a small mucous discharge; and with the increase of the retching the feces burst through the valve of the colon, and are occasionally thrown up from the stomach. At length the torture suddenly diminishes, and the patient appears to have obtained relief; but his pulse intermits, his face grows pale, his extremities cold, convulsions succeed, and he sinks in death.

Gen. VII. Spec. XII. a E. Enteritis adhæsiva. Description.

The general termination, therefore, when unfortunate, is that of gangrene; for it is rarely that the inflammation runs into a suppurative state. If in the course of the first two, three, or even four days, a free feculent discharge can be procured from the bowels, the vomiting and pains will gradually diminish, the pulse abate in quickness, and the patient be in the way of recovery.

Prognostics.

In treating this complaint, it is hence of the utmost importance to procure free evacuations, for the cure depends almost entirely upon our success in this respect. Yet the difficulty is often very great, and increased from the tendency of the stomach to reject whatever medicines are introduced into it. Most practitioners commence with bleeding, which they urge very copiously, and repeat every six or eight hours, according as the pulse will bear the lancet.

Curative plan.

Venesection how far useful.

* Περὶ Νοσων, III. p. 491.

GEN. VII. SPEC. XII. a E. Enteritis adhæsiva.

The remarks we have made upon this practice, under GASTRITIS, will apply to the present species. If the disease occur in a patient of a hardy and vigorous habit, and particularly if we have an opportunity of employing venesection within the first day or two, we shall commonly find it of essential service: but if we do not succeed, we shall assuredly hasten the stage of gangrene, and abbreviate the term of remedial operations. And hence, unless free bleeding can be employed early, and the constitution evinces a tolerable portion of vigour, there is no inflammation in which the lancet is less likely to be serviceable, or may become more mischievous. To local bleeding, even under the conditions we are now supposing, there is less objection; but we have less chance of benefit from it, than in peritonitis.

In what cases mischievous.

Cathartics mild rather than harsh, if of sufficient power.

From the first, therefore, we must attempt cathartics. If the stomach will retain the milder, as castor oil, neutral salts, or senna, these are by far the most advisable; as our object should be to diminish, instead of increasing, the irritation of the intestines. But, in the first species, this is rarely the case; and we must hence, without loss of time, apply to those that are more active; as calomel in combination with the colocynth pill: assisting their operation by injections frequently repeated, and in as large quantity as the bowels will retain.

But active purgatives not necessarily augmentive of inflammation.

Explained.

It does not necessarily follow, that the irritation of these more active purgatives will add to the inflammatory irritation; nor do we always, or even commonly, find any such effect. For, firstly, the operation of the two irritations is very different; and by exciting the former we may even diminish or take off the latter by a transfer of action, in the same manner as we take off inflammation from any other organ by the application of a blister to some neighbouring part. Secondly, the direct effect of the cathartic is to restore a natural action, the peristaltic action of the intestines, which it is the direct effect of the inflammatory action to oppose. And thirdly, we find, in fact, the beneficial influence of such a practice, not only generally, but almost uniformly, and are incapable of accounting for it upon any other principle.

Opiates when to be given.

Opiates would be desirable through the whole course of

this disease, but that in their general intention, they add to the costiveness if given alone, and retard the effect of purgatives if given in conjunction with them. Nevertheless, if, after copious bleeding, the costiveness should be intractable, and the flatulency and spasmodic pains very distressing, it will be better to trust for a few hours to two or three grains of opium alone, and withhold the purgative plan for the present. [Opium is frequently useful in quieting the sickness, and in enabling the stomach to retain laxative medicines.] Dr. Baillie recommends, as a general rule, "the inflammation to be subdued, or at least much lessened, before any active purgative be administered*." But we have already stated the principle, on which purging and bleeding may be combined from the first in ordinary cases.

GEN. VII. SPEC. XII. a. E. Enteritis adhæsiva.

[The editor's experience leads him to place more reliance on early and free bleeding, and less on premature purging, than the author has expressed. As Dr. Bateman has observed, the excessive constipation of the bowels is in general merely an effect of the inflammation, and is often attacked with active purgative medicines, as if it were the primary object, and the source of all mischief. The inflammation is to be subdued by blood-letting from a large orifice to an extent which must be various, and repeated or not, according to the constitution of the patient and the violence of the symptoms. Purgatives given by the mouth are not generally successful, when the inflammation has not been previously checked by local and general bleeding, and blistering. Dr. Gregory used to remark, in his lectures, that a purgative had often been known to operate as soon as a blister applied to the belly began to rise; and this observation is still more commonly verified after free venesection †.]

Fomentations and blisters to the abdomen form a regular course of the therapeutic plan, and have, no doubt, been occasionally serviceable; but, like local bleeding, they are less so in the present disease, than in peritonitis. And

Fomentation, blisters, and epithems.

* Lectures and Observations on Medicine. By the late M. Baillie, M.D. 1825. Unpublished.

† Bateman, on Enteritis, in Rees's Cyclopædia. Also Edin. Med. Surg. Journ. vol. i. p. 64.

GEN. VII. SPEC. XII. α E. Enteritis adhæsiva.

where fomentations are advisable, I prefer the epithem of a folded flannel wrung out in hot water, and confined with a swathe, as already recommended in peritonæal inflammation, to all other fomentations whatever.

Copious injections of warm water.

Injections of warm water alone, forcibly thrown up the rectum in as large a quantity as the bowels can be made to contain, are moreover often found of essential benefit, and are generally to be preferred to the warm bath, which, by adding to the debility, has accelerated the approach of gangrene.

After the bowels have been freely emptied, diaphoretics, and especially combined with opiates, will be the best plan we can pursue; and, if the stomach become quiescent, the patient should drink freely of diluents.

Singular rally of the constitution when apparently sinking.

There is a singular fact, noticed by Rhodius *, which sometimes occurs in this disease, and is peculiarly worthy of notice, as sustaining our hopes to the last: and it is this; that occasionally, in the extreme moment of a seeming mortification, a sudden revolution takes place, and stools are evacuated; and this, too, after the extremities have begun to grow cold, and an apparently deadly languor has overpowered the frame. In such case, we must snatch the patient from impending death by a free use of wine and warm generous cordials; closely attending, at the same time, to a copious discharge from the bowels, of which, with the liberal plan now recommended, we need not be afraid, and which we should be extremely cautious of checking by opiates.

How in such case to be assisted.

β E. Enteritis erythematica.

From the less threatening character of the symptoms, as they show themselves in the ERYTHEMATIC VARIETY, this affection often exhibits a fallacious appearance, and is misunderstood. "Sæpè," says Professor Frank, "nec febris in pulsibus umbra; ardor, dolor ad intestina aut nullus, aut certè non vehemens; nec ferè ulla tam diri morbi phænomena observantur†." Its real nature, however, is as we have explained it above: and from the debility superinduced, ascites has occasionally followed rapidly. It has been well ascertained that the seat of this variety is sometimes in the external coat of the intestines, and it is said,

* Cent. II. Obs. 69. † De Cur. Hom. Morb. tom. ii. p. 254.

by some writers, that this is the most common seat. It is not easy to determine upon this point: nor always, at its commencement, whether the inflammation be of the one variety or of the other; the modifying causes being, in some constitutions, and some seasons of the year and temperaments of the atmosphere, so nicely balanced as to leave the course doubtful.

Gen VII. Spec. XII. β E. Enteritis erythematica.

Tho two varieties not always to be distinguished at first.

In distinct and simple examples of erythematic inflammation, bleeding ought, unquestionably, to be abstained from; and acids, and the milder tonics, and bitters, as infusion of roses, cascarilla bark, and cinchona supply its place.

We have said, that in enteritis there is less pain and tension to the touch than in peritonitis. It is singular that at times there should be little or none whatever on pressing the abdomen. "Gastro-enteritis," observes M. Broussais, "exists without any painful point, when the inflammation is not vehement in the stomach and duodenum; and pressure of the belly does not produce uneasiness*." M. Petit speaks nearly to the same effect, though he modifies the opinion; affirming, "that if the belly be pressed a little deeply at its lower part, especially toward the right between the spine of the ilium and the navel, the patient is sensible of pain, and at times makes complaint of the pressure, and exhibits the same by his countenance†." Yet even in ulcerations of the mucous membrane, there is not always much uneasiness. "Nothing," says M. Andral, "is more common than an absence of every kind of pain in cases in which numerous ulcerated spots cover the inner surface either of the ileum, or of the cæcum, or of the colon; while we frequently see patients complaining of sharp abdominal pains, where the gastro-enteric mucous membrane is not inflamed‡."

Pain often imperceptible.

Broussais.

Petit.

Andral.

The last of these writers has lately favoured the world with a valuable and extensive range of examinations into the state of the alimentary canal in patients who have died of gastritis and enteritis; and we are hence enabled to

Comparative view of lesion in different parts of the alimentary canal.

* Examen des Doctrines Médicales et des Systèmes de Nosologie. Prop. CXXXVI. par F. J. V. Broussais.

† Traité de la Fièvre Entero-Mesenterique, &c. p. 131.

‡ Andral, Clinique Médicale, tom. i. 8vo. Paris, 1823.

GEN. VII. SPEC. XII. β E. Enteritis erythematica.

arrive at some calculation of the comparative frequency of inflammatory action in different parts of the canal. Ulcerations, he observes, may take place in every part, from the cardiac orifice to the anus: but they are not in all places equally common. They are rare in the stomach, and still more rare in the duodenum and jejunum: they are very frequent in the lower third of the small intestine; and they are again less frequent in the different parts of the great intestine. These conclusions are drawn from the following table, comprising seventy-one distinct cases of disease:

Reduced to a table.

In 10 individuals ulcerations were found in the stomach.
1 — duodenum.
9 — jejunum.
38 — lower part of ileum.
15 — cæcum.
4 — ascending colon.
11 — transverse colon.
3 — descending colon.
1 — rectum *.

Singular cause of production.

I have said that enteritis is sometimes a result of hernias. It has also, occasionally, been produced by a forcible protrusion of a part of the intestinal canal through the anus; of which a singular instance is given in the Medical Transactions, vol. iv., in a paper communicated by Dr. Latham: the part of the prolapsed intestine was very considerable, and the injury was occasioned by the passage of the wheel of a cart over the loins; a portion of the mesentery was protruded with that of the gut; gangrene supervened to the inflammation, and the prolapsed mesentery and intestine were cut off above the line of gangrene; the latter to a length of not less than fifty-seven inches. The patient, who was a boy, recovered; had motions regularly from the truncated extremity of the remaining intestine; and was able afterwards to walk twelve or fourteen miles a day. He had no power, however, of retaining his feces.

* Andral, ut suprà.

## SPECIES XIII.

## EMPRESMA HEPATITIS.

### *INFLAMMATION OF THE LIVER.*

TENSION, SORENESS, AND PAIN IN THE REGION OF THE LIVER; PAIN ABOUT THE RIGHT SHOULDER: FELT ESPECIALLY WHEN LYING ON THE LEFT SIDE; SHORT, DRY COUGH.

INFLAMMATION of the liver, which may in general be sufficiently known by the above characters, has also two varieties, dependent upon its more rapid and violent, or more tardy and obscure march. Gen. VII. Sp. XIII.

| | |
|---|---|
| α Acuta. Acute inflammation of the liver. | In which the above symptoms are clearly marked, and the character of the disease is decisive. |
| β Chronica. Chronic inflammation of the liver. | In which the specific character is obscure; and the existence of the disease suspected from a previous exposure to its causes, in connexion with an occasional recurrence of the pathognomonic symptoms, accompanied with a slight degree of fever. |

Next to the lungs and the brain, no organ more frequently has an hereditary predisposition to disease than the liver; and Frank has witnessed families suffering in consequence of it, as well in the acute as in the chronic form of inflammation *. Sometimes an hereditary affection.

The ACUTE VARIETY commences with the ordinary symptoms of visceral inflammation; chilness, succeeded by heat, frequent pulse, and a furred tongue: the bowels α E. Hepatitis acuta.

* De Cur. Hom. Morb. tom. ii. p. 268.

GEN. VII. SP. XIII. α E. Hepatitis acuta.

are irregular, mostly costive; the evacuations little tinged with bile, the urine often saffron-coloured; the skin is dry, the thirst extreme, with occasional sickness.

General remarks.

No physiologist has yet been able to explain the cause of the pain so generally felt in the right shoulder. It is, however, sympathetic of other affections of the liver, as jaundice, or chololithus, as well as of hepatitis; and hence it should seem to be produced by almost any morbid excitement of this organ, whether from inflammation, or the obstruction of gall-stones. [In several cases of hepatitis, reported by M. Louis, and the nature of which was verified by dissection, there was no pain in the right shoulder. Hence, this distinguished pathologist is disposed to doubt, whether it be a symptom truly appertaining to the complaint, and suspects that perhaps, when it does occur, the hepatitis is complicated with disease of the right lung, or pleura *.] The cough, which is often very distressing, is easily accounted for from the vicinity of the diaphragm to the seat of disease, and its sympathy with the liver. The sickness of the stomach is from the same cause.

Not always accompanied with a jaundiced skin:

The disease is sometimes accompanied with a jaundiced colour of the skin, and Sauvages and Sagar have made such a colour a specific symptom; but it is not always that the bile regurgitates, and, hence, such an appearance ought not to be enumerated among the pathognomonic characters.

which is also common to other affections.

Even where it exists, it is not a distinct symptom of hepatitis; for, to say nothing of proper jaundice, the feces, as Dr. Latham has well observed, may be light-coloured, and the eyes, skin, and urine peculiarly yellow, from the pressure of an indurated pancreas upon the bile ducts, and an obstruction of their course. [Out of five cases of hepatitis, detailed by M. Louis, four were attended with yellowness of the skin and pain in the right hypochondrium, but tension of the same part was remarked only in two. The concurrence of all these three symptoms accurately characterizes hepatitis; but one or two of them alone accompanying an acute disorder, M. Louis thinks, have little validity; for, with respect to the yellowness, it frequently takes place in such case without any hepatitis;

* Mém. et Recherches Anat. Pathologiques, p. 403. Paris, 1826.

and as for the pain, it may depend upon so many causes, that it is not a very conclusive symptom. When, however, pain in the right hypochondrium and jaundice arise from chronic diseases, M. Louis has never seen the latter effect without an accompanying inflammation of the liver*.] GEN. VII. SP. XIII. a E. Hepatitis acuta.

The ordinary remote causes are suddenly suppressed perspiration, especially from currents of cold and damp air, and excess of spirituous potation: though often the cause is too obscure for detection. [In France, M. Louis has seen hepatitis most frequently in the cold months of the year; and hence he doubts whether heat of climate ought to be regarded as a cause†. Hepatitis is certainly most common in the male sex, and is rarely met with in persons under the adult age.] Remote causes.

Dr. Saunders, and with some plausibility, suspects the acute variety is owing to an inflammatory state of the hepatic artery, and the chronic to a like state of the vena portæ. Winslow ascribes both to an inflamed state of the ramifications of the vena portæ, which, in his opinion, constitute the seat of the disease; while Cullen refers us to the hepatic artery alone, and limits the seat of inflammation to its extremities. Dr. Heberden is not inclined to believe, that the liver is primarily affected, but only influenced by a phlogistic diathesis, or preceding inflammatory fever. Proximate cause as conjectured by Saunders: by Winslow: by Cullen: Heberden.

If the inflammation originate in the membranes, the pain, as in most other cases of membranous affection, is peculiarly pungent, like that of pleuritis; the fever is severe, the tension very considerable, the pulse frequent, strong, and hard, the urine generally high-coloured. When the substance of the liver is primarily affected, the pain and pyrexy are far less acute, and especially at first; but they increase with the progress of the disease, or, in other words, as it extends to the membranes, the pain not only darting to the right shoulder, but sometimes as far as the throat and clavicle. Symptoms of membranous affection: of parabysmic affection.

Where the symptoms are most severe, and we have reason to suspect that the disease is confined to the membranes, the duration is often short, and the termination is Prognostics.

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* Louis, op. et loc. cit.

† Mém. Anat. Pathologiques, p. 403.

GEN. VII. SP. XIII. α E. Hepatitis acuta.

in most cases that of resolution. But when less active, and seated in the parenchyma, it generally tends to suppuration; and if the convex side of the liver be the part affected, a tumour is visible externally, the cough becomes aggravated, and there is a difficulty of breathing. If adhesions have preceded the suppuration, the pus points to the skin, and the abscess opens on the surface; but, if it break internally, it generally proves fatal by inducing a hectic; though sometimes, in consequence of fortunate adhesions below, the abscess discharges itself into the hepatic duct, and the pus is carried off by this channel. It has, occasionally, by the same means, made its way into the stomach and intestines, where the abscess has been very large. In which case, however, immediately upon the bursting of the vomica, the patient throws off, by sickness or by purging, a large mass of most offensive matter, and often dies in a few hours. In like manner, the pus has occasionally formed an empyema in the thorax; and, in a few instances, has been discharged from the lungs.

Progress of gangrene sometimes rapid.

The progress to a state of gangrene is sometimes very rapid, and especially in the swamps of the East and West Indies. Dr. Chisholm gives a striking example of this in a gentleman who, being "heated and profusely perspiring after violent exercise, lay down and slept in this state in a current of cool air. He awoke soon after in the most excruciating torture, in the right hypochondrium, and with great tumefaction of the whole abdomen. In two days he was dead." The liver was found greatly enlarged, and reduced in many parts to a state similar to that of rotten cork*.

Sometimes terminates in scirrhosity.

The disease sometimes terminates in induration, which bears an extent in some measure proportioned to the range of the preceding inflammation, and may often be felt by applying the hand to the region of the organ. This, however, is a more frequent result of the second or chronic variety.

Why found mostly among the robust,

In order to induce acute hepatitis, it is necessary that the organ of the liver, at the time of attack, should be in a state of at least moderate health and vigour; for it is in

* Climate and Diseases of Tropical Countries, p. 64, 8vo. London, 1822.

this condition only that inflammation running through its regular stages can take place; and hence the acute variety is found far more frequently in temperate than in inter-tropical climates; and, in the latter, more frequently among new comers, than among those that have been long habituated to the climate, and whose livers have been weakened and relaxed by the greater heat of the sun: "Among the men of the eighteenth regiment," says Mr. Christie, who was stationed at Trincomale, and had the care of the entire garrison in 1798, "I found, for the first six or eight months, the disease was much more frequent, much more violent in its symptoms, showed more tendency to suppuration, and was more sudden in its crisis, than with the Company's European troops, who had been long in India, although the latter were the most debauched. Among the natives, hepatitis does not often occur: out of a thousand native troops I did not, in the course of three months, meet with more than two cases of liver-complaints, which is comparatively a very small proportion*." There is, however, a striking distinction between the state of the bowels, as affected by this disease in hot and in temperate climates. In the latter it is rarely we have any diarrhœa, and often an obstinate costiveness, the evacuations being mostly untinged with bile. In the former, from the higher degree of irritation that prevails, and the greater extent of its range, a bilious flux is so frequent as to be almost a pathognomonic symptom; and as the gorged vessels are apt to give way from debility, this is sometimes intermixed with blood.

Gen. VII. Sp. XIII. a E. Hepatitis acuta.

and in temperate climates.

Illustrated.

Bowels differently affected in hot and temperate climates.

In our own climate, bleeding at the commencement of the disease is generally found serviceable, and ought to be prescribed as speedily as possible; and be repeated, generally or locally, as the violence of the symptoms may require, and the strength of the constitution allow. Frank advises leeches to the hemorrhoidal vessels, or to the hypochondrium; but the lancet is alone to be depended upon.

Remedial process in temperate climates. Bleeding.

Free purging, with calomel and Epsom salts, should immediately follow; and mercury be at the same time introduced into the system by the stomach, or by inunction, or by both. [Drs. Pemberton and Saunders gave the prefer-

Purging.

* Letter to the Editor of the Medical and Physical Journal, May, 1798.

GEN. VII. SP. XIII. α E. Hepatitis acuta.

ence to saline purgatives; Dr. James Currie to mercurial ones, and especially to calomel. With respect to inunction, or an attempt to affect the constitution generally with mercury in the early and highly inflammatory stage of hepatitis, it was disapproved of by the latter eminent physician, who used calomel at first only as an evacuant.] From the costiveness that usually accompanies the disease, it is rarely necessary to unite the mercury with opium; though, where it irritates the bowels, the latter should unquestionably be given; as it should also to allay the cough, where this symptom is very distressing and prevents sleep.

Mercurial course.

The mercurial course, as recommended by Sir James M'Grigor*, should be steadily persevered in, not only in hot climates, but in temperate, till a salutary change has been effected, or salivation has been freely excited. It will often be found, however, that the patient will bear a long continuance of the mercurial plan without any affection of the mouth, and will gradually and insensibly improve under it; the soreness and tension subsiding, the cough diminishing, the pulse becoming slower, and the heat and dryness of the skin yielding to a pleasant moisture; all of which are prognostics of a favourable issue.

To be of use in hot climates should produce ptyalism.

In hot climates, however, little benefit is obtained from mercury till it has produced ptyalism; while, such is the still greater degree of torpitude under which the absorbents, as well as the excretories of the liver labour, that it is often almost impossible to excite this effect by the boldest practice. "I have myself," says Dr. J. Johnson, "taken calomel in twenty-grain doses, three times a day, without experiencing the slightest inconvenience from the quantity; nay, I often found large doses sit easier on the stomach, and occasion less irritation in the bowels, than small ones. At this time too I was using every exertion, by inunction, to forward the ptyalism, yet it was several days before I could produce any effect of this kind†."

Blisters.

The application of large blisters over the hypogastric region in succession is recommended by most practitioners, but I have not found them successful; and have evidently

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* Medical Sketches, passim.

† Influence of Tropical Climates, &c. 3d edit. p. 174.

derived more benefit from fomentations, epithems, and the warm bath. Gen. VII. Sp. XIII. a E. Hepatitis acuta.

Diaphoretics should certainly form a part of the curative process; and they combine admirably with the mercurial treatment, particularly the antimonial preparations. Cooling, diluent, and even acidulated drinks should be taken copiously; the diet consist chiefly of light farinaceous foods; and the chamber be well ventilated. If, from sudden shiverings, and remission of the quickened pulse, we have reason to believe suppuration has taken place, columbo, the mineral acids, and, above all, the bark, where it can be retained, should be given freely; the cinchona, at least in the proportion of from half a drachm to a drachm, five or six times a day; and this whether the abscess be likely to burst externally or internally, and if the former, the direction should be encouraged by maturating cataplasms, and the abscess be opened as speedily as possible. The discharge is sometimes very considerable in quantity, and amounts to several pints; the pus is occasionally found pure, but more generally intermixed with coagulable lymph or some viscid, yellow fluid. It is at times lodged in different sacs, and hence subsequent tumours ensue, and subsequent openings are necessary*. Diaphoretics. Treatment in case of suppuration.

It is not always, however, even after suppuration has taken place, that the abscess must necessarily open in any direction; for, when we have full reason to believe such a result has occurred, the fluid may be carried off by absorption, and the organ be restored to a sound state. Pus sometimes absorbed with success.

[A softening of the liver has been noticed by several observers, and, amongst others, by M. Lallemand†, in a case of very acute hepatitis attended with abscess. But M. Louis conceives that, in the present state of our knowledge, a softening, joined with increased intensity of the red colour of liver, cannot be deemed a certain proof of inflammation, unless the organ contain at the same time pus, or the patient had, while living, icterus and pain in the right hypochondrium. In fact, as these two symptoms Softening and increased redness of the liver.

* Recueil d'Observations de Médecine des Hôpitaux Militaires, &c. Art. par M. Boucher, tom. ii. 4to. Paris.

† Troisième Lettre sur l'Encéphale, p. 351.

GEN. VII. SP. XIII. α E. Hepatitis acuta.

took place in four out of the five histories recorded by him, he believes they are rarely wanting *.]

Found by Chisholm contagious.

Dr. Chisholm found this disease on one occasion contagious. It was at Grenada in the winter of 1786, in districts peculiarly exposed to the influence of chilling northerly winds, and possessing large tracts of marsh. The disease was lamentably mortiferous, though the symptoms were insidious, rather than violent. It usually destroyed in the course of six days—and the deaths were calculated at one in every six †.

β E. Hepatitis chronica.

In CHRONIC HEPATITIS, all the specific symptoms, as already observed, show themselves obscurely. The pulse is something quicker than usual, and there is an obtuse pain in the region of the liver; but such as would not perhaps be noticed, if it were not inquired into, and the organ pressed upon, and connected with a sudden quick expiration after an attempt to inspire deeply; and there is also an indistinct uneasiness generally, though not always, about the right shoulder; all the symptoms becoming exacerbated at a certain period of the day, commonly about four o'clock in the afternoon. But in conjunction with the proper hepatic symptoms, the most obvious are those of dyspepsy and atrophy; the appetite fails, the stomach is capricious, the animal spirits flag, and the flesh wastes away. The bowels are generally costive, and the stools often clay-coloured, though not always; and there is usually a sallowness on the skin; or a dirty greenish hue, which Dr. Darwin, from its resemblance to the colour of a full-grown silk-worm, has denominated *bombycinous*. The disease slowly advances to suppuration, or terminates in a scirrhous induration; but in many instances, and especially after a habit of hard eating or drinking, is the index of a broken-up constitution.

Description.

Excess.

Excess in eating and drinking, or indeed in any other voluptuousness, is the common cause of this variety of hepatitis in temperate regions ‡, though it sometimes follows upon obstinate quartans. It is, however, a more frequent

* P. Ch. Louis, Mém. Anat. Pathologiques, p. 407.

† Climate and Diseases of Tropical Countries, &c. p. 66, 8vo. Lond. 1822.

‡ In this country, says Dr. Bateman, the chronic hepatitis is more common than the acute. Art. LIVER, Rees's Cyclopædia.—ED.

affection in hot climates, where, as already observed, it is far more apt to occur, than the preceding variety. And it is on this account we see so many persons returning annually to our own country from the East or West Indies, with enlarged livers, irregular fever, indigestion, costiveness, fulness in the right hypochondrium, white stools, yellow complexion, dry cough, disturbed sleep, and dejected spirits; occasionally some of these symptoms being wanting, and occasionally others. In all such cases, the organ is torpid, yet irritable, and the cure must depend upon our ability to give it fresh tone and vigour. The general congestion is most effectually removed by smaller doses of calomel than advised in the acute variety, so as to produce an alterant effect, and gently excite the sluggish secernents into a state of renewed activity. Though here also ptyalysm is aimed at in hot climates, yet in a milder degree, than in the acute variety. And, in conjunction with these, we are to employ warm aromatic bitters; and, where they agree with the stomach, the mineral acids. Dandelion, as recommended by Boerhaave and Bergius, has often been found serviceable. Dr. Pemberton paid much attention to its virtues, and had often seen it of decided advantage in incipient scirrhosities of the liver and other abdominal organs; and strongly recommended it in doses of half a drachm of the extract twice a day*. We cannot, however, always depend upon this preparation, and hence, as a general rule, it will be more advisable to employ the decoction. Where there is an evident tumour on the right side, a seton should be introduced over it.

Gen. VII. Sp. XIII. β E. Hepatitis chronica.

Treatment in severer cases:

In slighter cases, which have nevertheless compelled a return from India after a residence of eight or nine years, I have found all the symptoms vanish before a steady use of Plummer's or the blue pill, taken every night for a month; and the Cheltenham air and waters, for the same period of time, afterwards.

in slighter cases.

Where a chronic inflammation of the liver has terminated in a scirrhus of the whole organ, or of a great part of it, the blood is obstructed in its circulation, congestion takes place in other organs, and we often meet with very extensive hemorrhages from the lungs, nostrils, stomach,

Effects of a scirrhous infarction.

* Treatise on the Diseases of the Abdominal Viscera.

GEN. VII. SP. XIII. β E. Hepatitis chronica.

or anus. These discharges are rarely, perhaps never, of service in chronic cases, and only contribute to weaken the system. But in acute cases, constituting the first variety, by diminishing the phlogotic action, they are often of very essential use.

Extensive and dangerous hemorrhages. Useful instead of dangerous in the acute variety.

[The term *scirrhus* of the liver, which occurs in the foregoing pages, is employed both by writers and practitioners in two acceptations, or, at least, to denote two different stages of a disease, if not of two different diseases; namely, an induration of the substance of the liver generally, and the formation of tubercles in it; the former of which, in the opinion of Dr. Baillie, is the first step towards the latter.

Scirrhous liver; meanings of the term.

Disease of the liver not uncommonly brings on a cough, which is sometimes so prominent a symptom, as to lead the practitioner to suppose the seat of disease to be in the lungs*.]

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## SPECIES XIV.

## EMPRESMA SPLENITIS.

### *INFLAMMATION OF THE SPLEEN.*

HEAT, FULNESS, AND TENDERNESS IN THE SPLENIC REGION; WITH PAIN UPON PRESSURE.

GEN. VII. SP. XIV. General inacquaintance with the use of the spleen.

OF the use of the spleen, as observed in the Physiological Proem to the first class, we know little or nothing. It secretes no peculiar fluid, except what serves to produce a change in its own blood, which is of a dark livid colour, and coagulates with difficulty. It is commonly supposed to be an organ auxiliary to the liver; and it is unquestionably subject to all its ailments; voluptuous living, however,

* See Dr. Brooke's Case and Obs. on Liver-Cough, in Trans. of the King's and Queen's College of Physicians, vols. iii. and iv. And Sir Thomas Moriarty's Communication in the latter volume.

and even the heat of a torrid sun, affect it less; but obstinate tertians and quartans more, and render it sooner congestive and scirrhous. GEN. VII. SP. XIV. Empresma splenitis.

Inflammation of the spleen, together with the symptoms given in the definition, is accompanied with the usual pyrectic signs; and often with a pain extending over the whole of the abdomen, but particularly in the left side, and shooting from the diaphragm to the left shoulder. There is also not unfrequently a dry, short cough, and sense of constriction in the præcordia, sickness or nausea, and a discharge from the rectum of black or livid blood, from a rupture of some of the splenic vessels. It is, however, a rare complaint. "The spleen," observes Dr. Baillie, "is much less subject to inflammation than many other of the abdominal viscera. I do not recollect a strongly-marked case of it in my practice; and I have never met with an abscess in the spleen in all the dead bodies which I have examined*." Description.

The common causes of inflammation of the spleen, are the same as those of the liver; and the treatment needs not essentially vary, as the progress and terminations of the disease are not different. In India, where it is more common than in temperate climates, the native practitioners use acupunctures and scarifications. Causes and treatment.

The SPLENALGIA, or pain in the spleen, of many writers, is for the most part a slight attack of this disease with some small degree of fever. For further observations on diseases of the spleen, see Parabysma Splenicum, vol. i. Splenalgia, what.

* Lectures and Observations on Medicine, 1815. Unpublished.

## SPECIES XV.

## EMPRESMA NEPHRITIS.

### *INFLAMMATION OF THE KIDNEYS.*

PAIN IN THE RENAL REGION; FREQUENT MICTURITION; VOMITING; NUMBNESS OF THE THIGH ON THE AFFECTED SIDE; RETRACTION OF THE TESTICLE.

GEN. VII. SPEC. XV. General causes.

THE general causes of this species are whatever obstructs the flow of the fluids in the vessels of the kidneys; as a wound, contusion, tumour, strain of the muscles of the back that press on the kidneys, excess of horse-exercise, various acrids conveyed to the kidneys by the course of the circulation. It is, however, most frequently met with as a secondary disease, resulting from calculous matter blocking up the tubuli uriniferi, or from calculi formed in the pelvis of the kidneys, and obstructing that cavity or the canal of the ureters, concerning which we shall have to treat under the genus LITHIA, embracing calculous concretions in the urinary passages.

Mostly a secondary disease.

Symptoms.

The symptoms, enumerated in the specific definition, are sufficient to indicate the presence of nephritis, though the numbness and retraction of the testicle are common to calculi in the ureters or body of the kidney, even when there is little inflammation present. In the case before us, however, the skin is usually hot and dry, the body costive, and motion, and even an erect position, are accompanied with considerable uneasiness. By the last sign, we may distinguish the disease from an inflammation of the psoas, or almost any other adjacent muscle; while the immediate seat of pain separates it from colic, even when it is attended, as it is occasionally, with ventral gripings.

How distinguishable from other affections.

When the disease is violent, the urine is discharged in small quantity, and of a pale hue. And hence, if the urine become higher coloured, be secreted in a larger proportion, and be at length thick and mixed with mucus, a gradual relief may be expected to follow, and the cure will be

effected by a copious flow. The disease sometimes passes off also by a metastasis. But if the symptoms be protracted beyond the seventh day, and there be stupor or heaviness in the organ, instead of acute pain, with frequent returns of chilliness and shivering, we have reason to expect that an abscess will ensue: in which event, the pus may be discharged into the pelvis of the kidney, the abdomen, or, in case of adhesions, externally through the integuments and the skin. The first is the most favourable issue, next to that of resolution; the last is often succeeded by a cure, but an evacuation of pus into the cavity of the abdomen rarely. In some instances, the suppuration has been so considerable as to destroy the substance of the affected kidney entirely, and leave nothing but the external membrane. Yet there are cases, in which a patient has recovered even in this state, and the office of secretion has been performed by the sound kidney alone.

Gen. VII. Spec. XV. Empresma nephritis. Prognostica. In case of suppuration, pus how discharged.

Gangrene occasionally ensues, and is indicated by a sudden remission or cessation of pain, after great violence of vascular action; accompanied with cold sweats, a sinking pulse, discharge of black urine, and the other symptoms of approaching dissolution. Generally speaking, the cases of complete recovery are but few, though the patient often lingers, and even with an occasional prospect of recovery for many months, or even years. "The formation of matter," observes Dr. Baillie, "will sometimes be suspended for several months, and patients will recover, in a considerable degree, their general health. The disease will return, either from imprudence in diet or exercise, or without any known cause, and the patient will become as ill as ever. It very rarely happens that a patient permanently recovers from this disease, and I do not at present recollect an instance of it*."

Sometimes gangrene ensues.

In attempting a cure of nephritis, we should commence with copious bleeding, and we may most conveniently apply cupping-glasses to the region of the kidneys. Saline purgatives should follow; and then oleaginous or mucilaginous emulsions, with small doses of nitrate of potash, or tincture of digitalis. The last has often proved highly serviceable in taking off the arterial action that maintains

Treatment.

* Lectures and Observations on Medicine, 1825. Unpublished.

Gen. VII. Spec. XV. Empresma nephritis.

the inflammation, and at the same time in augmenting the urinary secretion. The loins should, at the same time, be covered with a large folded flannel wrung out in hot water, and confined as already described in the case of peritonitis; and copious emollient injections should be frequently thrown up the rectum, and suffered to remain there as long as the patient may be able to retain them. The rest of the treatment and regimen should be that of inflammation in general.

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## SPECIES XVI.

## EMPRESMA CYSTITIS.

### *INFLAMMATION OF THE BLADDER.*

PAIN AND SWELLING IN THE HYPOGASTRIC REGION; PAINFUL OR OBSTRUCTED DISCHARGE OF URINE; TENESMUS.

Gen. VII. Sp. XVI. Idiopathic inflammation not common.

The bladder is often irritated and inflamed by the lodgment of a calculus in it, by viscid substances that pass into the circulation, and particularly by cantharides, ardent spirits, and terebinthine essences or balsams. Idiopathic inflammation is not a frequent disease; yet it occasionally occurs; for the bladder is subject to the common causes of inflammatory affection. Both its exterior serous coat, and internal mucous membrane, are affected.

Distinctive characters.

If the lower part of the bladder be chiefly affected, the pain will extend to, and take the course of the perinæum. If the seat be in the neck of the organ, there will be a retention of urine with a constant urgency to evacuate; if in the fundus, the urine will flow stillatitiously, and without ceasing; the bladder will give a feeling of being constantly full; and the patient will be perpetually and fruitlessly striving to empty it. In this affection, there is usually great restlessness and anxiety, with cold extremities, vomiting, wildness of the eyes, delirium, and other marks

Disease proceeds rapidly:

of great general irritation. Much heat and smarting are generally experienced in the urethra; the patient is troubled with continual tenesmus; and pressure on the hypogastric region occasions violent suffering. The disease runs its course with rapidity, and subsides, or destroys the patient, in a few days. GEN. VII. SP. XVI. Empresma cystitis.

It terminates, like all other inflammations, most favourably by resolution. But if this do not take place, it passes on to suppuration or gangrene; the diagnostics of boh which are those already noticed in the preceding species. If suppuration take place, the pus may be discharged by the urethra, which is its happiest outlet; or it may follow the course of the ulceration, and be emptied into the cavity of the abdomen; or, if adhesions have been formed with the subjacent cellular membrane, it may work its way in a sinuous direction, and find an opening in some part of the perinæum. Of the last two terminations, the first is almost always fatal; and the second is extremely troublesome and tedious, though a cure is usually effected at last. and terminates variously.

Repeated bleedings, aperients, and relaxants, with copious emollient injections, suffered to remain in the rectum as long as possible, form the chief part of the plan of cure. Blood should be drawn both generally and locally, and a large bladder, about half full of warm water, be kept constantly over the pubes. The warm bath has also been frequently of essential service. When the urine is actually suppressed, it is usually evacuated by a catheter: but I would strenuously recommend, instead of this, a siphon formed upon the plan of that employed by Mr. Jukes for the stomach, and already described under *dysphagia constricta**, with an elastic bottle attached to its outer end, and a stop-cock adapted to it; so that, being introduced in its contracted or vacuum-state, it may readily be converted into a powerful suction-pump by merely turning the valve. This instrument may also be rendered of great importance in another way; for by charging it with an emollient or anodyne fluid, when the bladder is empty, we may get such preparations to come immediately in contact with the inflamed surface of the bladder, in any degree of Treatment. Elastic suction-pump.

* Class I. Ord. I. Gen. III. Spec. I.

Gen. VII. Sp. XVI. Empresma cystidis.

strength that may be advisable. [The editor believes, that the idea of appeasing an irritable or inflamed bladder, by throwing any kind of injection into that viscus, is now renounced by all practical men, as likely to be productive of more harm than good.]

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## SPECIES XVII.

## EMPRESMA HYSTERITIS.

### *INFLAMMATION OF THE WOMB.*

PAIN, SWELLING, AND TENDERNESS IN THE HYPOGASTRIC REGION; HEAT, PAIN, AND TENDERNESS IN THE OS UTERI: VOMITING: PULSE RAPID.

Gen. VII. Sp. XVII.

This species offers us two varieties, according to the condition of the organ at the time of attack:

| | |
|---|---|
| α Simplex. Simple inflammation of the womb. | The organ unimpregnated. Pain permanent, circumscribed, throbbing: fever a cauma. |
| β Puerperarum. Puerperal inflammation of the womb. | The organ having lately suffered childbirth. Pain less acute, less circumscribed; flow of urine difficult: fever a synochus or typhus. |

α E. Hysteritis simplex.

The first of these is produced by cold, or any of the other ordinary causes of inflammation, and terminates in resolution, suppuration, scirrhus, or gangrene. The most ordinary termination is that of resolution; the next that of scirrhus, sometimes running into cancer: both which are far more common to women who have never been impregnated, than to those who have had families, but rarely appear before menstruation, from the natural quiescence of the organ in this state*. [One symptom is constant and

Distinctive symptoms.

* J. P. Frank, de Cur. Hom. Morb. Epit. tom. ii. § 922. p. 217.

severe pain in the hypogastric region, which is increased by the slightest pressure, or on the patient's making a deep respiration. The urine is generally voided with difficulty, and in small quantities; and as the rectum participates in the irritation, a distressing tenesmus is experienced. The bowels are mostly irregular, the tongue white, and the pulse rapid, small, and, what some practitioners term, wiry. The pain frequently extends with great severity to the loins, and sometimes shoots down the thigh; and, as the stomach sympathizes, there is generally vomiting.] Gen. VII. Sp. XVII. α E. Hysteritis simplex.

All the ordinary means already noticed for subduing inflammation, both general and local, should here be put into effect without loss of time; as copious and repeated venesection, leeches, aperients, emollient injections both into the rectum and uterus itself, and fomentations or epithems to the hypogastrium. The disease is sometimes relieved by a sudden flow of the menses, with hemorrhage or genuine blood. Treatment.

The SECOND VARIETY, in which the symptoms are alike, but less acute, is usually, though not always, a result of suppressed lochia, or violence sustained during labour, particularly from the use of instruments: the inflammatory action from this cause often extends down the vagina, which is hot, reddened, tense, and tender to the touch; and sometimes the same effects descend so low as to be manifest externally. Bleeding is here to be avoided, and the inflammation to be attacked with gentle laxatives, diaphoretics, and, where there is much irritability, camphor and opiates; fomentations and injections being employed at the same time. β E. Hysteritis puerperarum.

It is a singular but well ascertained fact, that the spleen, from some unknown cause, is peculiarly apt to sympathize with the action of the womb, and at times to run into an equal degree of inflammation, suppuration, or even gangrene; and especially in females of a high nervous temperament. And so common is this fellowship of action, that most of the cases of diseased spleen related by Morgagni, are accompanied with an account of some mischief existing in the womb or its appendages. It is, however, to M. Gastellier of the Hospice de la Maternité, at Paris, that we are chiefly indebted for a knowledge of this peculiar sympathy, and especially in the case of uterine inflammation Singular sympathy of the spleen with the morbid uterus. Illustrated from Gastellier:

GEN. VII. SP. XVII. β E. Hysteritis puerperarum.

after childbirth. "La rate," says he, "en a été *souvent* frappée, mais une fois entr' autres elle a été entierèment détruite, entierèment fondue: il n'en restoit aucune trace, si non un foyer de fluide sanieux, dans la région, et en place de cet organe."

Confirmed by Dr. Ley.

This passage from M. Gastellier is quoted by Dr. Ley, in a case of a similar kind which lately occurred to himself in the Westminster Lying-in Hospital, and is given in the Medical Transactions of the College*. In this case, the preceding labour seems to have been perfectly natural, and without any difficulty whatever. On the third day afterwards, the disease seems to have commenced, indicated by intense pain over the whole of the abdominal region, with a slight sense of fulness, but without any considerable degree of tension. The patient sunk suddenly seven or eight days subsequently, and at a time when she was supposed to be in a state of improvement. On examining the body, the peritonæum and intestines exhibited little morbid affection of any kind, and the disease was found limited to the uterus and spleen; the peritonæal covering of both was slightly inflamed, but the internal structure of both had undergone a very extensive destruction. The whole surface of the uterus, when stripped of its tunic, was found to have assumed a gangrenous appearance, was extremely irregular, of a dark, livid hue, and gave forth a highly offensive vapour. The texture of the spleen was so changed as to resemble an extremely soft piece of sponge, and its cells were filled with an intimate mixture of pus and grumous blood.

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* Vol. v. Art. xx.

## SPECIES XVIII.

## EMPRESMA ORCHITIS.

### *INFLAMMATION OF THE TESTICLES.*

PAIN AND SWELLING OF THE TESTICLES; NAUSEA OR VOMITING; DEPRESSION OF SPIRITS; PULSE QUICK, SOMEWHAT LOW.

Gen. VII. Sp. XVIII. Hernia humoralis, what.

INFLAMMATION of the testicle has generally been expressed by the absurd and unmeaning name of *hernia humoralis;* which, however, in its earliest use, applied to only one stage of the disease, namely, the suppurative, and imported an abscess or collection of pus in any part of the scrotum; and in this sense the expression occurs in Heister and Dionis, being precisely synonymous with the empyocele of the Greeks. I have revived the Greek term ORCHITIS, not only as being far more precise, but as accordant with the general termination of the specific names of the diseases appertaining to the present genus.

Empyocele, what.

Progress of the disease.

The inflammation seems commonly to commence in the tunica vaginalis, and to pass secondarily into the substance of the testis. Dr. Swediaur contends that the testis never swells in the first instance, and that the disease always begins in the epididymis. The causes are irritation in the urethra, or external injuries. The most common source of irritation is a gonorrhœa. Bleeding, laxatives, and cold lotions, with a suspensory bandage, form the curative process. Yet we have already observed, that, when all local applications have proved ineffectual, the inflammation has been removed by vomits, in consequence of the close sympathy between the testis and the stomach.

Causes.

Treatment.

This was a frequent practice of Mr. John Hunter*, and especially when the inflammation was the result of gonorrhœa. It was successfully employed for the same purpose, and is hence strongly recommended by Rhazes†, and

* On Venereal Diseases. † Continent. lib. xi.

GEN. VII. SP. XVIII. Empresma orchitis.

is a common mode of treatment on the continent, particularly in Germany: after which opiates are often had recourse to, as well externally as internally. It may be worth remarking, that the affinity or play of action, which thus prevails between the testis and the stomach, does not appear to be the common bond of union that is exhibited between the stomach, as the general centre of sympathy, and most other parts of the system; but a fellowship of a peculiar kind, and which, in fact, does not terminate in the stomach, but extends to the upper extremity of the alimentary tube, and exercises a very high degree of influence over the parotid glands, as is well known in E. PAROTITIS, and has been already noticed in discussing that disease. In treating of E. HYSTERITIS, I have had occasion to glance at the existence of a like sympathy between the uterus and the spleen: and the physiologist who has time for such pursuits, and judgment enough to guide him to a correct discrimination, would be engaged in no unthrifty employment, if he were to follow up, and arrange in a regular classification, these specific and mysterious relationships which single organs hold with single organs, and which are subordinate to the general harmony of the entire machine.

Peculiar sympathy between the stomach and testis.

Parallel of affinities between other organs.

# GENUS VIII.

# OPHTHALMIA.

## *OPHTHALMY. INFLAMMATION OF THE EYE.*

PAIN AND REDNESS OF THE EYE OR ITS APPENDAGES: INTOLERANCE OF LIGHT; FLOW OF TEARS OR OTHER DISCHARGE.

GEN. VIII. Origin and general import of ophthalmia.

OPHTHALMIA, from the Greek term ὀφθαλμὸς, "oculus," is obviously of very extensive import, and, from its radical signification, may be applied to any morbid affection of the eye, unless limited by common consent. Now, although a sort of common consent has been given, so as to restrain the term to inflammatory action, such consent has not been universally acceded to; and hence ophthalmia has been used in very different senses by different writers. Thus Sauvages, Linnéus, and Sagar, employ it as expressive of any ache of the eye, without reference to pyrexy or inflammation. Amongst all these, therefore, it occurs under their class *dolores*, and runs parallel with cephalalgia, or cephalæa, ache or pain in the head. By Vogel, Cullen, and Macbride, it is limited to inflammatory affections of the eye; the two former arranging it as a genus, and the latter as a species. By Dr. Parr and Dr. Young it is also arranged as a species, and limited to phlogotic action; the second denominating it ophthalmitis, consonantly with the common termination of names importing inflammatory diseases of a particular description of internal membranes, and organs.

How understood by different writers.

Its meaning in the present work.

In the present system OPHTHALMIA assumes a middle rank: it is limited to inflammatory action accompanied with organic pain, but is arranged as a genus. It might possibly have been placed as a species under the preceding genus, EMPRESMA; but it has various characters peculiar to itself, as well in regard to its symptoms, as to the par-

GEN. VIII. Ophthalmia.

ticular parts of the organ affected, which seem to entitle it to the rank of a distinct genus. And thus explained, its real meaning will be found in the generic definition; the symptoms of inflammation common to the order, and entering into the ordinal definition, being always understood as a part of the generic character. [Yet, as the editor is obliged to remark, if the words of the definition be strictly adhered to, and no inflammations of the eye be regarded as species of ophthalmy, unless attended with redness and intolerance of light, certain cases, generally admitted to be such by the best modern practitioners, will be excluded. As Mr. Lawrence has correctly noticed in his valuable lectures, it is evidently impossible to reduce into one description the characters of the various inflammations affecting the several structures of the eye. The truth of this must be evident, when it is recollected, that the eye and its appendages exhibit, within a very small compass, a great variety of textures. As Mr. Lawrence has stated, we find, in the visual apparatus, specimens of each of the three divisions of membranes, the mucous, the fibrous, and the serous; the conjunctiva, the sclerotica, with the cornea, and the surfaces containing the aqueous humour, corresponding respectively to each of those classes. It contains also nervous, muscular, and glandular parts; and, besides these, several tissues of peculiar structure, to which there is nothing analogous in other parts of the body; as the iris, the ciliary body, the choroid coat, and the transparent media. Each of the latter has its own characteristic structure: the cornea, the crystalline lens, the capsule of the lens, and the vitreous humour, resemble each other only in being transparent. What similarity of character, inquires the same distinguished surgeon, can we trace between inflammation of the conjunctiva, cornea, iris, and retina? Inflammation of the external tunics differs widely from that of the internal. Hence the attempt to embrace all these affections under one head, name, or definition, will only lead to confusion. It may be argued, indeed, that several textures of the eye are frequently inflamed together; yet the affection mostly begins in one, and, if duly treated, may often be wholly or principally restricted to it. As, in a work of this kind, it can hardly be desirable to enter into a minute descrip-

Author's definition will not embrace all cases.

Great variety of the textures of the eye.

Inflammation of some textures have no resemblance to that of others.

tion of cases usually regarded as belonging to the department of the surgeon, the editor conceives, that a notice of the following species of ophthalmy will suffice, the arrangement being founded on the structure of the eye particularly affected. GEN. VIII. Ophthalmia.

| | |
|---|---|
| 1. OPHTHALMITIS. | INFLAMMATION OF THE WHOLE EYEBALL. |
| 2. OPHTHALMIA EXTERNA. | INFLAMMATION OF THE EXTERNAL TUNICS. |
| 3. ——— INTERNA. | INFLAMMATION OF THE INTERNAL PARTS OF THE EYE. |

These species, with their varieties, will embrace as much of the subject as can be expected in a work of the present description, rather embracing physic than surgery. Staphyloma, ectropium, and entropium, which were arranged in the preceding editions as species of ophthalmy, though frequently attended with a greater or less degree of inflammation of the organ, are never considered by any of the best practitioners of the present day as ophthalmies. It is therefore only on the principle of their being often associated with a degree of ophthalmy, that their admission into the present genus can be at all justified. The editor, therefore, with some reluctance suffers them to remain annexed to the foregoing species, and in the place assigned them by the author.

| | |
|---|---|
| 4. ——— STAPHYLOMA. | PROTUBERANT AND OPAQUE CORNEA. |
| 5. ——— ECTROPIUM. | EVERTED EYELID. |
| 6. ——— ENTROPIUM. | INVERTED EYELID. |

For the diseases affecting the SENSE of vision, and unaccompanied with inflammation, the reader must turn to the ensuing class NEUROTICA, order II. in volume IV.

## SPECIES I.

## OPHTHALMITIS.

### *INFLAMMATION OF THE WHOLE EYEBALL.*

INFLAMMATION SEATED IN NO PARTICULAR TEXTURE, OR COAT, BUT AFFECTING MORE OR LESS ALL THE TISSUES OF THE EYE; INCREASED SECRETION OF TEARS.

GEN. VIII. SPEC. I. Symptoms in the first stage.

WHEN this general inflammation of the globe is fully developed, it is characterized, as Mr. Lawrence has observed, by very considerable pain, increased external redness, more or less swelling of the part; increased lachrymal discharge, following, however, an earlier stiffness and dryness of the eye; and by redness and swelling of the upper eyelid. The pain is by no means confined to the front of the eye; but is deep-seated, and extends to the surrounding parts, as the brow, cheek, temple, and back of the head. The redness is at first inconsiderable and seated in the sclerotic coat; but the conjunctiva soon participates in it, and the distention of its vessels produces the bright scarlet redness, which conceals the faint pink colour of the sclerotica. The conjunctiva then begins to swell, and a deposition of lymph takes place not only into the texture of the membrane, but into the loose cellular tissue that unites it to the sclerotica. This bright scarlet elevation of the conjunctiva, projecting beyond and surrounding the cornea, firm, of considerable breadth, and acutely sensible, is technically called *chemosis*.

Chemosis.

The access of light is very offensive to the patient in general inflammation of the globe of the eye; the pupil contracts to exclude it, and the eyelids are spasmodically closed. As the slightest attempt also to exert the organ produces severe pain, the patient keeps it as completely as possible at rest.

Effects noticed in the second stage.

In the second stage, various alterations of structure are noticed. The iris changes in colour, its brilliancy declines, and it no longer exhibits its usual motions in the

varying degrees of light. The pupil contracts, and loses its clear black colour. The cornea becomes more or less opaque, and vision is lost. The alteration in the cornea, and in the state of the pupil, as Mr. Lawrence well observes, would account for imperfection or loss of sight; but the latter often occurs while the cornea is sufficiently clear for the transmission of light, and the pupil still open: hence, the evil is then to be ascribed to the mischievous effects of the inflammation on the structure of the retina; which effects also, no doubt, generally exist, when the above specified causes of the interruption of the passage of light into the eye are present. GEN. VIII. SPEC. I. Ophthalmitis.

When the inflammation has attained its greatest violence, ectropium of the lower eyelid takes place, and a portion of the anterior surface of the eye projects in a denuded state, like a piece of red flesh.

To continue Mr. Lawrence's matchless description, here, however, considerably abridged, the mucous membrane of the eyelids becomes the seat of inflammation equally violent with that of the conjunctiva of the globe, becoming red as well as the skin, and the consequent swelling forms a large convex protuberance on the upper eyelid. The pulse is quick, hard, and full; the face flushed; headache is experienced; the skin is hot and dry; the tongue white; the appetite lost; the patient restless, and his nights sleepless.

The disorder, if not checked, is now attended with aggravation of all the general and local symptoms; the pain becomes throbbing, rigors occur, and suppuration of the eyeball follows; the cornea turns of a dull white and then yellow colour. The agony is not relieved by the formation of matter, but continues for some days, until the cornea bursts, and the contents of the abscess are discharged, generally with the vitreous humour and crystalline lens. Matter is discharged for a time; the tunics of the eye collapse, shrink into the orbit, and the original form of the organ is completely lost. Suppuration of the eyeball.

When the disease does not proceed so far, the cornea becomes opaque, and remains so; the pupil is either closed or very much contracted, and the aperture filled by a newly formed adventitious substance. Vision is either completely, or in a great degree, lost; but the form of the eye remains. Cornea opaque, and pupil more or less closed.

GEN. VIII. SPEC. I. Ophthalmitis.

The most favourable termination that can be expected is the recovery of the organ, with the cornea clear, and the pupil open; still, in this case, as Mr. Lawrence has observed, the retina has generally suffered so much, that more or less imperfection of vision is produced.

Retina often permanently injured.

Peculiarity of this inflammation.

The present species of ophthalmy is characterized by its commencing, at one and the same time, in the external and internal tunics of the eye. Internal inflammation may spread to the external coats, or external inflammation may extend inwards; but, in this affection, both sets of parts are simultaneously attacked.

Prognosis.

The prognosis, as delivered by Mr. Lawrence, is short and instructive: if the affection be seen early, and actively treated, you may expect to arrest it, and to prevent a change of structure in the organ, and consequent injury, or loss of sight. But, if the inflammation be fully developed, it can hardly be controlled, so as to preserve the powers of the organ unimpaired. When chemosis is actually established, the cornea clouded, the colour of the iris changed, and the pupil contracted, the patient will certainly lose his sight.

Causes of ophthalmy.

With respect to the causes of ophthalmy in general, our limits will permit us only to give a brief enumeration of them. Accidental wounds; surgical operations; and direct injury of the eye by various extraneous substances, mechanical or chemical stimuli, coming in contact with it; immoderate use of the organ; the influence of various states of the atmosphere; dense winter fogs; currents of cold wind blowing directly on the eye; exposure of the organ to vivid light, or its employment in the examination of luminous shining bodies. To use Mr. Lawrence's words, as the eyes are parts of an organic system, connected with the rest by vessels and supply of blood, by nerves, and by reciprocal sympathetic influence in health and disease, the remote and predisposing causes must be the same for them as for the rest of the body. One of the most important of these is fulness of habit, and, more technically, a plethoric condition of the system, arising from excess, or imprudent indulgence, in the quantity or quality of food and drink. These indulgences produce and keep up an unnatural excitement, under which accidental circumstances more readily occasion disease, and that disease partakes

more of the acute inflammatory character. The effects of all excesses at table will generally be aggravated, if combined with the unhealthiness of sedentary occupations in close and crowded dwellings. Another predisposing cause is the suppression of some habitual discharge, as that of menstruation. When, as Mr. Lawrence observes, we consider that, in a large portion of the community, all these predisposing circumstances are united with the direct exciting influence of excessive or injurious exertion of the organ, we shall cease to wonder at the numerous instances of inflammation in all the textures of the eye, that daily present themselves to our observation.

In the treatment of all inflammations of the eye, the removal of the cause forms one of the most important and early indications; not, however, that we have it in our power always to trace the precise cause, or, when it is known, to remove it. Its removal, also, will not invariably prevent the disorder from making advance, though certainly it is one of the most likely means of having this desirable effect. Thus, if ophthalmy be excited by the lodgment of any extraneous matter, as a small insect, a particle of gravel, sand, &c. between the eyeball and lid, the extraction of such foreign body must scarcely require any knowledge of surgery to make its necessity plain to any common understanding; the removal of it in particular cases, however, demands surgical skill. The following directions, given by Mr. Lawrence, deserve to be recollected. In order to discover and remove any minute substance that has insinuated itself into the eye, you should first look attentively at the exposed surface of the organ in a good light; if you discover nothing there, you should proceed to depress the under lid, and bring the lower surface of the globe into view, by desiring the patient to look up to the ceiling. If you still find nothing, direct the patient to look in the opposite direction, and raise the upper lid, so as to bring into view the superior surface of the globe. In most instances, the extraneous substances lodge in the concavity of the upper eyelid, and cause exquisite pain. When they are thus situated, you must evert the lid. Take the cilia between your finger and thumb, and draw the lid outwards; press with a probe steadily against its upper part; then carry the ciliary

Mode of removing extraneous substances from the eye.

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margin backwards; you thus turn the lid inside out, and immediately see whether any extraneous body lodges there. Particles of metal, imbedded in the cornea, should be removed with a cataract needle.

Another indication is to protect the eye from injurious external influences. Thus, as Mr. Lawrence has observed, employment of the inflamed organ irritates it, and increases the inflammatory disturbance. The eye should, therefore, remain perfectly at rest, and even in slighter inflammation, active exertion of the organ should be discontinued, as in reading, writing, &c. although passive exercise of it may be permitted. This rule applies to the sound eye, when the other is the seat of violent inflammation. In the worst cases, the patient should be kept in a darkened room; but, in general, it will be sufficient to moderate the light by the ordinary Venetian blinds, and to protect the eye by the common pasteboard shade, covered with green crape or silk. The inflamed eye should never be exposed to cold air in windy, rainy, or damp weather, and great vicissitudes of temperature should be avoided.

Protection of the eye from too much light, cold air, exertion, &c.

The preceding measures are only to be regarded as auxiliaries to the grand plan to be adopted for stopping the inflammation. To use Mr. Lawrence's expressions, it becomes necessary to institute early, and to follow up steadily, bold and decisive antiphlogistic treatment, for the purpose of preventing any injurious changes in an organ, the perfect state of which is essential to the comfort and enjoyment of life.

General bleeding.

Here local bleeding alone will rarely suffice: and the patient must be bled freely from the arm. In cases of inflammation affecting the entire globe of the eye, in inflammation of the external proper tunics affecting both eyes, or where it is very severe in one, general bleeding should be resorted to. Mr. Lawrence states, that a single large bleeding will in general be sufficient; but he is not inclined to measure the quantity of blood to be taken by ounces, but by the effect produced upon the system. He bleeds till the circulation decidedly feels the loss, and, in severe cases, where the eye is in danger, till fainting is produced.

Cupping.

The next mode of taking blood, in point of efficacy,

Mr. Lawrence considers to be cupping, either from the back of the neck, or the temple, especially the latter, from which part blood can be obtained quickly, and in large quantity. GEN. VIII. SPEC. I. Ophthalmitis.

Blood may be drawn by leeches applied as near to the eye as possible. Mr. Lawrence thinks the eyelids the best situation; though he admits that this practice is apt to produce an ecchymosis, that causes for some time an unpleasant appearance. Copious bleedings by leeches, or cupping-glasses, are usually recommended from the temples; but it has been suggested, that the former may be employed with inconceivably more advantage, if applied directly to the mucous lining of the lower eyelid. We learn from Dr. Crampton, that this method has been pursued with almost universal success in the most severe cases in the Royal Military Infirmary at Dublin *; and it is said to have the great advantage of not being followed by that erysipelatous affection, which so often follow the application of leeches to the external surface of the eyelids, or even to the temples. This mode of using leeches may deserve more extensive trial. Leeches.

In Mr. Lawrence's opinion, opening the temporal artery is less advantageous and convenient than cupping. We sometimes do not get blood enough in this way, and sometimes there is difficulty in stopping the bleeding. In active inflammation, the practice of scarifying the conjunctiva is decidedly condemned by him, and he thinks that there are very few cases of chronic ophthalmy, in which it is beneficial. Opening the temporal artery.

The bowels are also to be cleared out by an active purge of calomel, combined with rhubarb, extract of colocynth, or jalap, or followed by senna, salts, &c. Antimony and nitre may afterwards be given to keep up perspiration, and aperients to maintain regularity of the bowels. In all severe cases, the patient should be restricted to fluid, or spoon-diet; and, in milder attacks, fermented liquors and animal food ought not to be allowed. Purgatives and antimonials. Low diet.

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* Crampton on the application of leeches to internal surfaces. Dublin Hospital Reports, vol. iii. p. 223, &c.

GEN. VIII. SPEC. I. Ophthalmitis.

Blisters.

After these measures have been adopted, blisters may be applied to the back of the neck, or behind the ear. Mr. Lawrence is of opinion, that, in active inflammation, they should never be applied nearer to the organ, than these situations.

Emetic treatment.

Large doses of tartarized antimony have been recommended, with the view of keeping up nausea and vomiting, and thus suddenly checking the progress of inflammation of the eye. It seems to have been practised by Dr. Dobson, of Kirkham, as long ago as the year 1773*. While, however, Mr. Lawrence admits, that the plan diminishes the heart's action, lessens the force and frequency of the pulse, and certainly so far lessens the degree of any local inflammation, he deems the remedy severe, and not to be depended upon.

Local applications.

This distinguished surgeon has little confidence in local applications; but he does not object to the use of saturnine collyria, or fomentations, the choice being regulated by the patient's feelings.

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## SPECIES II.

## OPHTHALMIA EXTERNA.

### *INFLAMMATION OF THE EXTERNAL TUNICS OF THE EYE.*

INFLAMMATION SEATED IN THE EXTERNAL TUNICS, ATTENDED WITH INCREASED LACHRYMAL DISCHARGE, IF IN THE SCLEROTICA AND CONJUNCTIVA UNITEDLY; BUT WITH MUCOUS, OR PURULENT DISCHARGE, IF THE INFLAMMATION BE OF A SPECIFIC CHARACTER, AND AFFECT PRIMARILY AND CHIEFLY THE CONJUNCTIVA.

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As, under the term external ophthalmy, may be comprised all inflammations affecting chiefly, or primarily, the

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* Edin. Med. Com. iii. p. 411.

outer coats of the eye, the proper tunics, as well as the conjunctiva, and sometimes the eyelids, it is here proposed to notice the following varieties *. GEN. VIII. SPEC. II. Ophthalmia externa.

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| α Ophthalmia externa communis. | Inflammation of the external coats of the eye. |
| β Ophthalmia catarrhalis. | Catarrhal, or mucous inflammation of the conjunctiva. |
| γ Ophthalmia purulenta. | Purulent inflammation of the eye. |
| δ Ophthalmia glutinosa. Psorophthalmia. | Affecting the conjunctival lining and edges of the eyelids. |

α Ophthalmia externa communis.

The first variety, as Mr. Lawrence has observed, which is common, or simple inflammation in subjects otherwise healthy, varies considerably in degree, from slight congestion of the conjunctiva to acute inflammation of the same membrane, with chemosis, and similar inflammation of the sclerotica and cornea. Under its various degrees and forms, it has been designated by different names. *Taraxis* denotes the slighter cases; *ophthalmia angularis* refers to a particular seat of the disorder; *xerophthalmia* denotes the dryness of the organ in a particular stage of the affection; and *chemosis* is sometimes used to denote its most violent or dangerous form, on account of the particular swelling of the conjunctiva often attending it, and described in the foregoing section under this name.

Terms applied to its various forms.

Common ophthalmy may be seated in the conjunctiva only, or in the sclerotica and cornea. Although both cases may, without impropriety, be called external inflammation of the eye, they are, as Mr. Lawrence has noticed, very different in their symptoms, progress, termination, and treatment.

Simple inflammation of the conjunctiva is, generally speaking, an unimportant affection. In consequence of its loose texture, the vessels of the membrane yield readily; there is little pain or inconvenience; and no danger

Differences between inflammation of the sclerotica and that of the conjunctiva.

* For much valuable matter in this part of the work, the editor is indebted to Mr. Lawrence's Lectures, as published in vols. ix. and x. of the Lancet.

GEN. VIII. SPEC. II. a O. externa communia.

to the organ. The firmer textures of the sclerotica and cornea yield to distention, with pain and slowness; their vessels do not easily recover, so that inflammation is with more difficulty subdued; and the implication of the cornea, with the ready transition of inflammation to the iris, exposes the organ to serious danger.

Symptoms.

The symptoms of inflammation, affecting the external proper tunics of the eye, are redness, pain, intolerance of light, increased lachrymal discharge, with more or less febrile disturbance.

To pursue Mr. Lawrence's valuable description, the redness begins on the front of the globe, immediately round the cornea, where it forms a red zone. Numerous blood-vessels may be seen advancing from the posterior part upon the sclerotica, and branching out into numerous ramifications, which are at length lost in the red zone. In inflammation of the conjunctiva, the redness commences in the circumference, the anterior part being at first comparatively free from it, and the sclerotica retaining its natural white appearance. The character of the red tint differs remarkably in the two cases. The vessels distended in sclerotic inflammation, or *sclerotitis*, as it is frequently termed, ars those seated immediately upon the sclerotic coat; they are therefore covered by the conjunctiva, and, being seen through that membrane, are of a dark, rose-red, and sometimes almost of a livid hue, which forms a striking contrast to the bright scarlet tint of the vessels, distended in conjunctival inflammation. The zone, seen around the cornea in the early stage, is also of a rose or pink colour. The redness is uniformly diffused through the sclerotic coat; and, when the inflammation is considerable, a dense arrangement of vessels may be noticed, lying under the conjunctiva, and occupying the whole surface of the sclerotic coat. In inflammation of the conjunctiva, the vessels are not only of a bright scarlet colour, but lie nakedly on the surface of the membrane. When inflammation, without being very violent, is seated in the conjunctiva and sclerotica at the same time, the marked difference in the situation and tint of the two orders of vessels is very manifest.

Sclerotitis contrasted with conjunctival inflammation.

Diagnosis continued.

When the sclerotic coat inflames, the conjunctiva soon participates in the affection; and the cornea, without becoming opaque, assumes a kind of dull appearance.

Other common symptoms are, a sense of stiffness and dryness in the eye in the early stage of the disorder; a burning, or aching pain in the organ; a sense of tension, or pressure of it; and a feeling as if sand or gravel were in contact with it, and pain shooting to the back of the orbit and side of the face. Intolerance of light is a marked symptom from the commencement of sclerotic inflammation, and forms another striking contrast between this affection and conjunctival inflammation; for, in the latter, the patient generally opens the eye freely, and experiences no pain from the access of light.

GEN. VIII. SPEC. II. *a* O. externa communis.

If the inflammation proceed further, the cornea first becomes grayish, and, when chemosis occurs, it turns white, cloudy, and then yellow; a thick, viscid matter, that cannot be discharged by puncture, being deposited in its texture. An effusion of a similar nature also frequently takes place in the anterior chamber, constituting the case termed *hypopium*. Sometimes the cornea is perforated by ulceration; the aqueous humour escapes; the iris becomes adherent to the opaque cornea, with or without prolapsus; and vision is lost. Inflammation of the external proper coats, then, is distinguished by the redness being originally seated in the sclerotica; by the discharge being lachrymal, not mucous; by the pain and intolerance of light; and by the changes occurring in the cornea. In conjunctival inflammation, there is increased mucous discharge; little or no pain, nor intolerance of light, except at first; and seldom any affection of the cornea. According to Mr. Lawrence, the degree of danger to the eye will depend on the question, whether the inflammation extends to the cornea; and, if it does, on the degree of that inflammation. If the cornea is not involved, there is no risk; or, if the affection of that part be slight, we need not apprehend any injury of vision. The degree of sclerotic redness in the early stage is a criterion, from which we may form an opinion, whether it will be severe, or otherwise. If the case proceeds to chemosis; if the cornea becomes gray or white; or, if matter be deposited in its texture; sight will be more or less impaired.

Thick matter effused in the cornea and anterior chamber.

Differences from conjunctival inflammation.

Prognosis.

With regard to the treatment, it should conform to the directions given under the first species of the present genus; the extent and rigour of the antiphlogistic mea-

Treatment.

GEN. VIII. SPEC. II. sures being regulated by the degree and violence of the inflammation.

β Ophthalmia catarrhalis. The distinct nature of catarrhal ophthalmy, and its origin from atmospheric causes or peculiarities, are expressed, as

Popular names. Mr. Lawrence has well observed, in the terms *cold* or *blight*, under which it is often popularly mentioned. The expression, *mucous ophthalmy*, designates the increased mucous discharge, which is one of its most striking characters. It is inflammation of the conjunctiva, either of the globe, or of the eyelids, or of both, caused by cold, and it corresponds to catarrhal affections of other mucous membranes, as those of the nose and its sinuses, of the fauces,

Its nature. trachea, and lungs. Catarrhal inflammation frequently goes through all these parts, and commonly so in influenza.

Symptoms. The symptoms of catarrhal ophthalmy, as described by Mr. Lawrence, are at first stiffness and smarting; some uneasiness on exposure to light; and external redness. When fully developed, the disorder is characterized by redness, increased *mucous*, not *lachrymal* discharge; inconsiderable pain, and no intolerance of light. The redness is superficial, and of a bright scarlet colour; and at first generally in patches, the whole surface not becoming uniformly red, till the disorder is fully developed. The redness begins at the circumference of the globe, and gradually advances towards the cornea; but, in the commencement, it is confined to the palpebral conjunctiva. Sometimes little ecchymoses appear on the conjunctiva, and sometimes small vesicles, called pustules, generally situated near the edge of the cornea; but there is nothing like chemosis.

When the lachrymal discharge, noticed in the very commencement, stops, its place is supplied by increased secretion of mucus from the inflamed membrane itself. This is at first thin, afterwards becomes thicker, assuming a whitish, or yellowish, appearance, and sometimes resembling pus. Whenever catarrhal inflammation of the eye is at all considerable, the eyelids participate in the disorder; and a pain and sense of weight are felt about the frontal sinuses and antrum, with head-ache, disordered stomach, foul loaded tongue, and other febrile symptoms. In the daytime, the redness is less; there is no pain, nor intolerance of light; but, in the evening, the disorder undergoes an exacerbation.

Catarrhal is distinguished from purulent ophthalmy by its much milder character; and Mr. Lawrence thinks, that they differ rather in degree, than in any other essential point, unless it should be proved, which he thinks is not yet the case, that purulent ophthalmy is contagious.

GEN. VIII. SPEC. II. O. Externa. β O. Catarrhalis.

Differences from purulant ophthalmy.

As the affection is not a serious one, and does not produce injurious consequences to the organ, venesection is not in general necessary; but, in a young subject of full habit, with both eyes severely attacked, a full blood-letting would be proper. In ordinary cases, cupping and leeches will suffice. An active aperient, and if the tongue be foul, an emetic, will advantageously follow the loss of blood. Saline and sudorific medicines may then be given, and occasional purgatives. The patient is to be kept warm, take plentifully of diluent drinks, and no animal food, nor fermented liquor. The pediluvium, or warm-bath, may be useful, and, perhaps, after a few days, a blister on the nape of the neck. Where the case seems to depend on a disordered state of the alimentary canal, an emetic, and an active purgative containing calomel, or the latter alone, followed by mild aperients and low diet, will often suffice, without the abstraction of any blood. The best local applications are fomentations. The sticking of the eyelids together, during the night, should be prevented by inserting a little mild ointment between the tarsal edges in the evening. The eye will not require a shade, unless the light should be strong and offensive. Cool air will also be pleasant to the patient's feelings, and tend to remove the sensation of sand being in the eye.

Treatment.

Purulent ophthalmy of adult subjects, the third variety of external inflammation of the eye, here to be treated of, is a case of the most acute kind, attended with an increased secretion, which, in colour and consistence, resembles pus. The affection begins in the lining of the eyelids; extends to the mucous surface of the globe; and when violent and not checked, it soon attacks the cornea. The whole texture of the conjunctiva then swells and becomes thicker; its vascular texture is developed; and its surface acquires an intensely bright red colour. The mucous surface is rendered villous, pulpy, granular, like the secreting surfaces of the alimentary canal; and, from the secreting surface, thus developed, flows

γ Ophthalmia purulenta.

Mr. Lawrence's description of it.

GEN. VIII. SPEC. II. O. Externa. γ O. Purulenta.

the puriform discharge. This form of disease does not, like others, produce suppuration of the eye. The changes in the cornea are sloughing, ulceration, and opacity. The sloughing and ulceration often expose the anterior chamber, causing prolapsus of the iris, loss of the humours, and collapse of the tunics, so that not only the function, but the very form, of the eye is destroyed.

The affection has been described under various names; as *purulent*, *Egyptian*, and *contagious ophthalmy*.

Symptoms and progress of the disease.

In the first page, there is redness of the palpebral conjunctiva, with some stiffness of the eyelids; and a little whitish mucus is seen on the membrane; but, as Mr. Lawrence adds, this stage is seldom seen by the surgeon. The disease soon extends to the globe, in what may be called its second stage; and now we see it marked by high vascular action, and bright redness, great tumefaction of the membrane, and profuse discharge. Frequently, there are red patches, apparently of ecchymosis. The swelling of the conjunctiva on the globe often raises it in the form of chemosis, which is sometimes so considerable as completely to hide the cornea. At this period, the whole eyelid swells from an effusion of serum in its texture. At first, a stiffness is felt in the eyelids and globe: and then a sensation is experienced, as if sand, or gravel, were in the organ. As the inflammation extends to the globe, the pain becomes severe and excruciating; and is deep-seated in the eye, often with throbbing of the temples and head-ache. "I have seen (says the younger Dr. Frank) the bravest soldiers cry like children for a whole night; and have heard them declare, that they would readily allow the affected eye to be torn out, if they could hereby get rid of the pain*.

In the third stage, as Mr. Lawrence has explained, there is a gradual remission of the symptoms: the swelling, pain, and discharge are lessened; the external œdema ceases; and the swelling of the conjunctiva being no longer counterbalanced, the palpebræ are everted, especially the lower.

Granulated state of the conjunctiva.

A thickened and granulated state of the lining of the eyelids, with consequent opacity and vascularity of the cornea, are remote effects of the inflammation when it be-

* De Peste, Dysenteria, et Ophthalmia Ægyptiaca, 8vo. Vienna.

comes chronic. Some unnatural redness of the membrane, with slight swelling, and a little discharge, often continues for a long time; and there is a great tendency to relapse. GEN. VIII. SPEC. II. O. Externa. γ O. Purulenta.

If the cornea retain its natural transparency, we may expect to arrest the inflammation by vigorous treatment; if it be dull, and deep-seated pain in the eye and head announce extension of inflammation to the globe, the event is doubtful.] Prognosis.

This is the disease, concerning which so much has of late years been written by French and English surgeons and physicians; which proved so extremely destructive to the armies of both nations in their respective expeditions to the banks of the Nile; and the real nature and cure of which have been discussed in modern times with no small degree of acrimony in our own country, but at the same time with much benefit to the public, from the facts and the ingenuity which the controversy has brought to light. There appears little doubt, however, that it has occasionally existed even in our own day, in ships of war, antecedently to the expedition to Egypt, of which Sir Gilbert Blane has given two examples *, though it does not seem to have been a subject of much attention at the time. Nature of the disease and mode of treatment, of recent discovery.

This disease was at first ascribed to the minute and glassy spiculæ of the sands of the Egyptian plains. But it has since been referred, either to a peculiar miasm generated in marsh-lands, or to sleeping on damp or swampy ground, with insufficient covering, and surrounded by a moist atmosphere. And as these causes exist in other parts of the world than in Egypt, the disease is noticed in other countries, and, as we shall presently remark, appears to have been known in former times. The most contested points, however, in the history of the disease are, whether, after the disorder has been once produced by the above, or other unknown causes, the matter secreted by the conjunctiva be contagious or not? and whether the extensive spreading of the affection afterwards should not be imputed to this circumstance, rather than to epidemic causes? How accounted for at first. How at present. Whether contagious.

[The generality of practitioners now incline to the affirmative on both these questions. In the last edition of this

* Select Dissertations, &c. p. 215.

GEN. VIII. SPEC. II. O. Externa. γ O. Purulenta.

work, it was observed by Dr. Good, that the matter is impregnated with a specific contagion; and hence the disease is propagated with great rapidity between those who come in contact with each other by sleeping together, or using the same towels. He had known it to be caught by a surgeon's assistant, merely in consequence of syringing the eyes of a patient; a part of the discharge having, from the force of the syringing, spurted into one of the assistant's eyes, which was for some days in a state of danger. Sir Patrick M'Gregor*, in the account which he has given of this affection, as it occurred in the Royal Military Asylum, mentions three instances in which the nurses of the establishment caught the disease, either whilst syringing the eyes of patients, or from having employed sponges used by the children.

It is curious to find, however, that Assalini and all the surgeons who accompanied the French expedition to Egypt, never entertained any belief of the contagious nature of the disease. Mr. Lawrence, also, who has paid so much attention to the nature of diseases of the eye in general, and has written on them perhaps with more judgment and precision than any other man, regards the doctrine of contagion as still involved in doubt. In support of the opposite view, he remarks, that in all cases, where collections of individuals labouring under it have been separated or dispersed, as when troops are disbanded, and go into civil life, the complaint is put a stop to, and does not extend itself. Now, if it were contagious, and capable of producing a like disease in others, we should suppose, that this would be the very way to spread it all over the country; but, we find it the most effectual mode of putting a stop to the disorder. There is no dissemination of the complaint in the families, or districts, to which the soldiers, or other persons so afflicted, return. Yet, in opposition to this statement, it is to be remembered, that the extraordinary and increased prevalence of purulent ophthalmy in the army and elsewhere in this country, since the return of our troops from Egypt in 1801, is ascribed to the importation of the infection by soldiers labouring under the disease. If a healthy regiment also enter barracks, which have been

Considerations against the doctrine of contagion.

* Trans. for the Improvement of Med. Knowledge, vol. iii.

quitted by another corps, more or less afflicted with the complaint, experience proves, that the new comers are almost sure to suffer. If the facts of inoculation by contact, mentioned by Sir Patrick M'Gregor and Dr. Good, be unimpeachable, such affirmative evidence amounts to a proof of the infectious character of the disorder, and cannot be in the slightest degree invalidated by the result of Mr. Mackesy's* bold experiment of applying to his own eyes a rag, soaked in the purulent discharge from the eyes of three of his patients; but, without contracting the disease.

Gen. VIII. Spec. II. O. Externa. γ O. Purulenta.

Mr. Lawrence does not however venture so far as to assert, that purulent ophthalmy is not contagious; but merely that it is a point requiring further proof. He considers, that there is abundant evidence, that the disease arises from other causes, than from the application of matter from the eyes of one individual to those of another. Many patients went to the Ophthalmic Infirmary, in whom he could trace no connexion whatever with persons labouring under the same affection, and yet they had decided purulent ophthalmy. According to his experience, purulent inflammation may be produced by the action of common causes, without the application of any morbid matter to the eye. But, when it is once produced, it is capable of propagating itself, under particular circumstances, in a way which we cannot easily distinguish from a contagious propagation. When individuals are crowded together in great numbers in confined habitations, sleeping in the same rooms, and using the same linen and the same utensils, and not carefully attending to personal cleanliness; deleterious influences on human health are known to be produced, though their nature and mode of action are obscure. The bad effects are increased by unwholesome diet, insufficient clothing, and inadequate ventilation. Hence, the only instances of the disorder spreading extensively, and virulently, have been in barracks, ships†, schools, prisons, and workhouses.

Disease sometimes arises from other causes.

Mr. Lawrence's opinions.

In the treatment of purulent ophthalmia, two indications present themselves; the first is, to check the inflam-

Treatment.

* See Edin. Med. and Surg. Journ. vol. xii.

† See Lawrence's Lectures on Diseases of the Eye; Lancet, vol. ix. p. 756, &c.

Gen. VIII. Spec. II. O. Externa. 7 O. Purulenta.

mation by antiphlogistic means; the second is, to restore the altered texture of the conjunctiva to its natural state by the use of astringents. In this manner, not only may the ulceration of the cornea and other destructive effects on vision be prevented, but, as Mr. Lawrence observes, you will also avert that chronic thickening and granulation, which are so obstinate and troublesome.]

Bleeding.

The earliest mode of treatment, pursued by the French, as we learn from the account of Dr. Antonio Savaresi, as well as of Dr. L. Frank, consisted in little more than the general treatment of the common acute ophthalmy; as local bleeding, drawn, however, from the jugular vein or temporal artery, blisters, saline purgatives, anodyne lotions, and a low diet. The bleedings however do not appear to have been very copious. And yet the first writer tells us, that, by this process alone, he was so fortunate, that, out of a thousand or thereabouts, who were confined in the French military hospitals in Egypt under his care, not more than two lost their sight completely, though some others suffered the loss of one eye.

Not generally successful,

In the hands of our own army-practitioners, the plan of treatment, thus limited, completely failed, and the bleeding, which was almost solely depended upon, was carried, from the first day of the attack, and repeated for several days afterwards, to as great an extent, not only as fainting, but as life itself would allow. The first accounts we had of this practice seemed to show, that it was in the highest degree successful*: but later experience has not justified the representation, and the extensive lists of blind pensioners, supported by the Chelsea and Greenwich hospitals, are a sufficient proof that the success of the evacuating plan was considerably exaggerated. A free abstraction of blood by leeches applied to the conjunctive tunic itself, does not appear to have been tried till of late by Dr. Crampton, in the Dublin hospital, where it seems to have been of very decided advantage when employed in the first stage of the disease.

though carried to its utmost extent.

* Account of the Ophthalmia which has appeared in England since the return of the British army. By J. Vetch, M.D.

[Although bleeding seems not to have been invariably capable of checking the disease, the reason of this may perhaps have depended upon its not being combined with the seasonable employment of other judicious measures; and the impossibility of invariably removing soldiers from those influences by which the disease is kept up. Certainly, at the present day, and in this metropolis, purulent ophthalmy is treated with great success, which is in a great measure ascribed to free bleeding in the early stage. Mr. Lawrence recommends copious venesection so as to produce syncope, as the first proceeding. If the symptoms remain urgent, he advises the bleeding to be repeated. Subsequently, cupping may be practised on the temple, or numerous leeches applied round the eye and repeated. Cold or tepid washes should be used. Brisk purgatives in the first instance, and afterwards milder aperients, will be necessary, with low diet and rest. After these plans have been adopted, blisters are to be employed. Such means are to be repeated and continued till the œdematous swelling of the eyelids, the chemosis, and the pain are reduced. The conjunctiva will now be paler, and assume a relaxed and flabby appearance, the discharge still continuing in abundance.

Gen. VIII. Spec. II. O. Externa. γ O. purulenta.

Other measures necessary

In this stage, astringent lotions are to be applied to the organ, tonic medicines prescribed, and a better diet allowed. Mr. Lawrence prefers, at first, a solution of alum, and afterwards one of the nitrate of silver, or the undiluted liquor plumbi acetatis. Two or three drops of either of the latter liquids should be introduced between the eyelids twice or thrice a day, and the eye may be bathed occasionally in the intervals with the alum lotion. The ung. hydrarg. nitrat. may also be applied to the edges of the eyelids at night. Bark, cascarilla, and dilute sulphuric or nitric acid, with occasional aperients, are the internal medicines recommended by the same practitioner. He advises surgeons to watch carefully at first the effect of astringents, for if the pain continue after their use, with an increase of redness, they must be left off, and antiphlogistic measures be resorted to again.

Astringents and tonics.

When the cornea is in a sloughing or ulcerating state, accompanied with debility, the patient should have wine,

GEN. VIII. SPEC. II. O. Externa. γ O. Purulenta.

porter, good diet, and the sulphate of quinine, and use local astringents*.]

Improvement by Saunders: who discovered that the inflammation consists of two stages.

The late Mr. Saunders was the first in the present day to discover, that the blindness which is so apt to follow, even after the first attack of virulent inflammation has subsided, proceeds from the friction upon the transparent cornea, of innumerable irritating granulations, as he denominated them, thrown forth from the surface of the tunica conjunctiva that lines the interior of the palpebræ, and which become a new source of inflammation, less violent indeed, but as fatal in its effects; and the disease has hence been very correctly divided into two stages, that of primary and that of secondary or apparently granulating inflammation. Mr. Saunders endeavoured to cut the disease short in its first stage by exciting nausea, and maintaining it for a considerable period of time, so as to lower the living power, and hereby take off the inflammatory action. And where the disease had proceeded to what he called the granulating stage, he removed the minute caruncles from the tunica conjunctiva by cutting them off with a pair of scissors, and afterwards applied a solution of nitrate of silver to prevent their sprouting again. Instead of the nauseating process employed in the first stage, Sir William Adams boldly prescribed active and powerful vomiting, continued for eight or ten hours, by giving two grains of tartar emetic at first, and continuing one grain every half hour afterwards, through the whole of this period; by which violence a change of action, or new but more manageable excitement, is often produced in the eye, and the disease is stopped in the course of ten or twelve hours from its onset. [The editor need scarcely observe, that, though most inflammations may be checked by the emetic treatment, the plan is severe, and less to be depended upon, than free bleeding and other antiphlogistic remedies.]

Management of the first stage:

of the second stage.

In both cases further improved by Adams.

Where the second or granulating stage has commenced, Sir William Adams used to cut away the diseased surface of the conjunctiva, instead of the granulating points alone; by which the morbid action is destroyed, not only with less

* See Lawrence's Lectures; Lancet, vol. ix.

pain, but far more radically and effectually; and he afterwards employs a solution of alum, instead of a solution of nitrate of silver, as the latter is hereby rendered unnecessary; not to mention that the agony it excites is often intolerable, and that a new inflammation has followed, in some instances almost as dangerous as the original inflammation itself. Emetics, indeed, have long been occasionally made use of as a mean of relieving inflammation in the eyes, but not in the particular kind before us, nor perhaps at any time of the inflammation with the precise object in view, proposed by Sir William Adams. Stoll, for instance, employed them successfully in periodic ophthalmies*; and Dobson, as already observed, in ophthalmies of a like chronic kind, accompanied with nervous debility; the bark being interposed between their repetition†. The nearest approach, however, to this practice which I have met with on medical records is Dr. Dobson's case, already noticed in the foregoing pages.

GEN. VIII. SPEC. II. γ O. Purulenta.

Emetics long known to be useful in ophthalmy; and employed, but upon a different principle.

Yet, though the emetic plan carried to this extent, and employed for the express purpose just stated, does not appear to have been had recourse to in this form of ophthalmy till our own day, it has been very clearly shown by those who have critically and historically examined into the subject, that this very affection was long ago known to the world, and has been rationally as well as successfully treated in different ages. As the Greeks were much better acquainted with Egypt than ourselves, it is hardly to be supposed that it could have escaped their notice, and it has hence been suggested, with much probability, that it is referred to by them under the term PLADAROTIS‡; while it is ingeniously affirmed by a learned critic of our own day to have been described by the old surgeons of our own country under the expressive appellation of the MULBERRY EYELID§. There can, however, be no question that the ophthalmy before us was well known to them under whatever name described; and that even the *granulations* of the second stage, as they are incorrectly deno-

The pladarotis of the Greeks: or mulberry eyelid of earlier English surgeons:

* Nat. Med. Part ii. p. 102.

† Med. Comm. Edin. vol. iii. p. 444.

‡ Galen. Isag. 21δ. c. 6. vol. v. fol. 1542.

§ Quarterly Journal of Foreign Med. vol. i. p. 403.

GEN. VIII. SPEC. II. γ O. Purulenta.

especially of Read.

minated, and which are rather enlarged and indurated cryptæ of the conjunctiva, had not only been noticed by them, but were even removed by some of the most approved methods of modern surgery: since it is expressly recommended by Read, who flourished nearly a century and a half ago, that, "if they be thick and gross, they must be cut away dexterously with the point of a lancet, and afterwards let the place be touched with a little fine salt, alum, or copperas water*." This, however, is not mentioned with a view of deducting from the merit of Mr. Saunders or of Sir William Adams; since the practice, and even the name of its original inventor, seems to have been long lost sight of in the annals of chirurgical science, and consequently the revival of such a practice, and a detection of its benefits are as much a discovery now as it was in the time of Read. [At the present day, the practice of cutting away the granulations is less frequently adopted, than that of touching them with nitrate of silver or sulphate of copper; experience having proved, that they are more apt to grow again after the use of the knife or scissors, than after that of escharotics or caustics. The eversion of the eyelid, frequently remaining after an attack of purulent ophthalmy, may also be speedily cured by touching the surface of the thickened conjunctiva with these applications, which have the effect of restoring to it a healthy surface. The plan, however, is only right in the perfectly chronic stage, or rather a stage subsequent to those of the original complaint.

First stage, description of.

With respect to the *purulent ophthalmy of new-born children*, it usually comes on within a week from birth. Both eyes are usually affected, but they are not first attacked exactly at the same time. In the first stage, it is confined to the mucous lining of the eyelids, which are remarked to adhere together when the child wakes. Their edges are redder than natural, especially at the corners; and the access of light to the eye produces pain, and makes the child shut it. If at this period the eyelids be everted, their lining will be found to be red and villous, and a little white mucus will be seen lying on the inside of the lower eyelid.

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* Short, but exact Account of all the Diseases incident to the Eyes. Lond. 2d edit. p. 96. 1706. See also Quarterly Jour. of Foreign Med. ut suprà.

In the second stage, the inflammation extends from the palpebral conjunctiva to that covering the eyeball; the vascular congestion and redness are much augmented; the eyelids swell and become red even externally; from the inflamed membrane there is a copious secretion of purulent fluid, which glues the edges of the eyelids together, and then accumulates under the latter parts, or pours out over the face, staining the cap and linen. As the light is very painful, the child keeps the eye constantly shut, even if the swelling of the eyelids should not already close it. In this second stage, the whole of the conjunctiva is swollen, of an uniform bright scarlet colour, and presents a villous surface. It is further remarked by Mr. Lawrence, that the close adhesion of the membrane to the tarsi prevents the palpebral conjunctiva from swelling much; but the loose folds between the lid and the globe become greatly enlarged, forming red tumid rolls, finely granulated. These folds, pressed on by the orbicularis, evert the tarsi, causing ectropium of one or both eyelids. This eversion particularly takes place when the child cries, or the surgeon attempts to examine the eye by separating the eyelids. Sometimes the upper eyelid is so swelled that it hangs completely over the lower. During the night, the eyelids become so adherent to each other that they cannot be opened in the morning till after they have been soaked with warm water. When they are separated, the eye is completely concealed by the discharge; we wipe it away with a soft rag, and there is still enough to cover the globe and hide the cornea. If the disease should not be checked, it extends to the cornea, and thus may reach the interior of the globe. Some one or more of the following changes are now produced: general or partial sloughing of the cornea; ulceration or opacity of the same part; adhesion of the iris to the inflamed or ulcerated cornea. In the third stage, there is a gradual abatement and cessation of all the symptoms; the redness, swelling, and discharge are diminished; the child opens the eyes more readily to the light; and no ectropium takes place. The opportunity of seeing whatever changes may have been produced by active inflammation is now afforded.

Gen. VIII. Spec. II. γ O. Purulenta.

Second stage.

Ectropium produced.

Occasional consequences.

Third stage.

When the complaint is severe, the infant becomes rest-

GEN. VIII. SPEC. II. γ O. Purulenta.

The agglutination of the eyelids is to be prevented, and the exit of the discharge promoted, by frequently bathing them with tepid water, or milk, and applying a little lard, or fresh butter, to their edges.

The inflammatory stage having been subdued, astringents are to be employed. Mr. Lawrence uses a solution of alum in the proportion of from two to ten grains of alum to each ounce of water, according to circumstances. This lotion is to be carefully injected under the eyelids, three or four times a day, so as to cleanse out all the purulent secretion; and, in the intervals, a piece of rag, wetted with the same wash, may be laid over the eye. If the alum lotion ceases to have effect, a solution of nitrate of silver, in the proportion of two grains to each ounce of water, may be dropped into the eye, two or three times a day.]

Where an ulcer is detected, a solution of nitrate of silver.

How to be applied.

If, when the inflammation begins to subside, an ulcer be detected on any part of the cornea, and especially if it be over the pupil, a solution of nitrate of silver, in the proportion of a grain to an ounce of water, should be dropped into the eye night and morning after the syringing is over, and the eye be kept open for about half a minute, so that the solution may not be wiped away suddenly by the closing of the lids, but may fairly lie upon the ulcer and float over it for this period of time.

Sulphate of quinine with laudanum if necessary.

The sulphate of quinine should also be given dissolved in a small quantity of water, to as great an extent as the infant can bear it, [or the extract of bark, broken down, and blended with milk may be prescribed, as advised by Mr. Lawrence;] and if looseness be produced, it should be checked by a drop or half a drop of laudanum in each draught.

Prussiate of potash in the form of an ointment.

Prussiate of potash is also a very good astringent for contracting the area of the ulcer, and expediting the healing process; and may be used instead of the solution of the nitrate of silver in the form of an ointment, by means of the unguentum cetacei. By a careful perseverance in this process, I have not only seen ulcerations on the cornea heal speedily, but in one or two instances, without leaving any cicatrix to impede vision, even where the ulceration has been seated over the pupil.

[The varieties of purulent ophthalmy, said to arise from metastasis of gonorrhœa from the urethra to the eyes, and from the inadvertent application of the urethral discharge

to the eyelids, hardly require a particular description in a work of this nature.] GEN. VIII. SPEC. II. δ O. Glutinosa.

δ *Ophthalmia glutinosa*, so called in the present work, is the psorophthalmia of Plenck and Mr. Ware; and consists in an inflamed state of the small sebaceous glands, whose ducts, arranged in a row on the edge of each eyelid, pour forth a viscid matter that incrusts and hardens; and, during sleep, when the lids have been for some time in contact, glues them together so firmly, that they cannot be separated without many a painful effort. This matter, instead of being mild and lubricant, as in health, is now not only viscid but acrimonious and erosive; whence the eye is irritated, and the edges of the lids ulcerated; and the complaint is apt to become chronic, and will sometimes last for years, or even for life. The psorophthalmia of Plenck and Ware. Description.

The disease is not unfrequently produced by small-pox and measles; occasionally by common ophthalmy from cold or any other causes, and in a few instances, though rarely, from a sty. Sometimes it appears to be the result of a scrofulous habit. Causes.

It is best attacked, and perhaps only to be cured, by such local stimulants as may excite a new action or inflammation, that may be more manageable. The practice of M. St. Yves was here very bold; he touched the ulcers on the edge of the eyelid with lapis infernalis, and thus cauterized the morbid surface. The unguentum hydrargyri nitratis, or the older form entitled unguentum hydrargyri nitrati, has of late been used with equal success, and with far less danger of injuring the ball of the eye; and if the inflammation have spread from the tarsus to the ball itself, this also may be smeared with the same application. The best way of using which is, not that of a pencil-brush, but of letting a drop of it fall into the eye, melted for the purpose in a small silver spoon held over a candle. Or a drop of spirits, as vinum opii, ether, or Riga balsam may be allowed to fall into the eye in the same manner, and be repeated daily. [Besides local applications, the compound calomel pill, and other alterative and aperient medicines, are frequently necessary.] Treatment.

## SPECIES III.

## OPHTHALMIA INTERNA.

### *INFLAMMATION OF THE INTERNAL PARTS OF THE EYE.*

ACCOMPANIED WITH LESS EXTERNAL APPEARANCE OF DISEASE, THAN THE PRECEDING SPECIES; ITS COMMENCEMENT AND PROGRESS FREQUENTLY INSIDIOUS; AND OFTEN ATTENDED BY LITTLE OR NO EXTERNAL REDNESS.

GEN. VIII. SPEC. III. Ophthalmia interna.

[ACCORDING to the judicious and practical observations of Mr. Lawrence, inflammation may be confined to one of the internal structures, or all of them may be involved. The close connexion between the different internal parts, and their common vascular supply, are sufficient to account for the extension of inflammation from one to another. If inflammation commences in the iris, it readily extends to the ciliary body, choroid coat, vitreous humour and retina. On the other hand, it may spread forward to the anterior part of the eye, so that a case of iritis often involves in its progress the greater part, or the whole, of the internal tunics, and also the external parts. Inflammation, beginning in the retina, spreads in like manner to the vitreous tunic, choroid, iris, &c. Mr. Lawrence treats of four varieties of internal ophthalmy; namely, inflammation of the anterior and posterior chambers of the eye; inflammation of the iris; inflammation of the internal tunics generally; and inflammation of the posterior tunics of the eye.

As this work is not designed to convey a minute account of ophthalmic surgery, the first variety must here be omitted, and our remarks confined to

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|---|---|
| α Iritis. | Inflammation of the iris. |
| β Inflammatio tunicarum internarum oculi. | Inflammation of the choroid coat and retina. |

As in the arrangement of inflammation of the eye, adopted in this edition, inflammation of the iris is classed as a variety of internal ophthalmy, and not as a species, no particular definition of it is placed as a leading head at the beginning of this section. Yet, as that inserted by Dr. Good is correct and instructive, it may be as well here to repeat it.]

GEN. VIII. SPEC. III. Ophthalmia interna. « Iritis.

Inflammation commencing in the iris; colour of the part changed to green or reddish; fibres less moveable, and shooting dentiform processes into the pupil; pupil irregularly contracted and grayish.

Dr. Schmidt of Vienna, to whom we are chiefly indebted for an accurate description of this species, has denominated it *Iritis**; and under this name it has of late years been described by many practical surgeons in our own country. The termination, however, is unclassical, and if the derivative be retained, it should unquestionably be iri*d*itis, instead of iritis; but ophthalmia *iridis* is better, as the disease is very clearly a species of a connexive genus of diseases, rather than a distinct genus itself. It is the more singular, however, that iritis should have ever been used by its inventor, as the Germans have long employed the more correct relative compounds of iri*d*otomia, iri*d*ectomia, and iri*d*ody*a*lysis.

The iritis of Schmidt: but the name not classical.

The exact change of colour, which the inflamed iris assumes, first in its less, and then in its greater circle, depends upon the peculiar colour it possessed when in health. If this were grayish or blue, the morbid hue will be green; if brown or black, it will be reddish. The grayish or cloudy appearance of the pupil is produced by the secretion of coagulable lymph, which spreads over it in a fine flake like a cobweb. If the inflammation do not yield to the curative treatment, a yellowish-red tubercle forms in some part of the surface of the iris, commonly where the greater and less circles of the membrane meet; it enlarges, projects still forwarder, and is distinctly seen to be an abscess, which at length bursts and discharges its contents into the anterior chamber.

Morbid change of colour accounted for. Cloudy appearance accounted for.

[As Mr. Lawrence remarks, iritis is an adhesive inflammation; that is, an inflammation, attended with deposition

The character of the inflammation adhesive.

* Ueber Nachstaar und Iritis nach Staaroperationem. Wien. 1801.

GEN. VIII. SPEC. III. Ophthalmia interna. a Iritis.

of new matter, indiscriminately called by the not very precise term of coagulable lymph. The chief character of the affection, he says, is this effusion of lymph, either into the texture of the iris, or in distinct masses on its surface, or in a more or less fluid form. This effusion of coagulable lymph, besides changing the colour and general appearance of the iris, impairs and destroys its motions; frequently renders it adherent to surrounding parts; alters the form and size of the pupil; and obstructs that aperture, so as to produce more or less impairment of sight. But, though the inflammation is called adhesive, and the substance effused is commonly lymph, it appears, pus may be poured out from the inflamed iris, or, at all events, a fluid of a yellowish colour, that sinks to the bottom of the anterior chamber, and cannot be distinguished from pus; and where the inflammation is violent, even blood itself may be effused.

Quality of the matter effused in, or from, the iris.

Other symptoms.

In the beginning, there is some intolerance of light; the sclerotic coat participates more or less in the inflammation; and there is consequently a greater or less degree of increased sensibility. If the inflammation be not relieved by proper treatment, Mr. Lawrence finds that an opposite state succeeds, or dimness of sight, caused by other changes, which now take place in the pupil and cornea. From the commencement, there is generally more or less pain, which varies in degree according to the acuteness of the attack, and often extends around the orbit, and sometimes to the front or back of the head. The pain is often characterized by nocturnal exacerbations.

Red zone around the cornea.

In the enumeration of the symptoms of iritis, however, what most particularly deserves notice is the redness, which appears in the form of a zone around the cornea, and consists of the vessels on the forepart of the sclerotica. In the beginning, a pale pink blush of sclerotic redness is perceptible, and, although the conjunctiva is not altered, the trunks of the vessels of the sclerotica may be observed to be in a state of distension. If the affection continue to increase, the inflammation spreads from the iris to the corpus ciliare, choroid coat and retina, with increase of pain and fever, and ultimately with irrecoverable loss of vision. At the same time, the mischief is propagated forward, the cornea becomes more opaque, the conjunctiva

more inflamed, and great external redness is added to all the other symptoms.

After the active inflammation at length abates, the permanent disorganization and changes of structure remain; as general adhesion of the iris to the cornea, with opacity of the latter, and even scaphyloma; or adhesion of the edge of the pupil to the capsule of the lens; a motionless contracted state of the pupil, &c. « Iritis.

A change of colour in the whole iris, with considerable contraction of the pupil, and an opaque substance in it, with intense external redness, great and deep-seated pain, and complete insensibility to light, are circumstances denoting, according to Mr. Lawrence's experience, a hopeless case. When the inflammation is recent, confined to the iris, and unattended with permanent changes of structure in the iris, cornea, or retina, or adhesions, and irregularity of the pupil, the prognosis is favourable.] Prognosis.

This distressing affection sometimes follows the operation for the cataract; in which an irritation is often excited either by endeavouring to press out the lens through too small a wound in the cornea; by suffering some pieces of the lens to remain in the posterior chamber; or from too frequent an exposure of the internal surface to the air by unnecessarily raising the flaps of the cornea. And the disease was hence, in our country, till of late, most absurdly denominated *secondary cataract*. [It also originates from accidental injuries, and irritation, and immoderate exertion of the eye. Causes of iritis.

Iritis is particularly apt to occur in certain states of the constitution, and, as Mr. Lawrence mentions, it has even been doubted, whether there is any such thing as idiopathic iritis, except as the result of direct mechanical injury. The unhealthy condition of the constitution, promoting attacks of iritis, are those produced by morbid poisons, as in syphilis, or those occurring in individuals who are subject to gouty and rheumatic complaints. Iritis is rare in young subjects, in whom these states of the system do not exist.]

Where a patient is labouring under an arthritic diathesis, and is accidentally affected by a common ophthalmy, this species is apt to be engrafted upon it. It is also an accompaniment of several cutaneous eruptions, especially those connected with an abuse of mercury. Occasional causes.

GEN. VII SPEC. VI. ∝E. Bronchlemmitis acuta.

formed, it should be after every other remedy has failed, and not before any other has been attempted. [When the exudation extends through the trachea, and ramifications of the bronchiæ, as the pathological observations of Laennec, Louis, and many other writers prove to be frequently, though not always the case, there will be but little hope of benefit from such an operation *. Dr. Cheyne also long ago showed, that the operation cannot be necessary for the purpose of letting air into the trachea; for in patients, who died of the disease, he found a pervious canal one-fourth of an inch in diameter. He considered the operation as equally unfitted for the removal of the membrane; for, from its extent, tenacity, and adhesions, this is almost always impracticable, and even if it could be extracted, respiration would be but little improved, as the ramifications of the trachea, and bronchial cells, would still remain obstructed †.

Cause of death.

The question relating to this operation is intimately connected with another point; namely, how far the fatal result of croup may be really owing to the obstruction of the glottis with coagulable lymph. If, says M. Louis, the false membrane lessen the air passages of a child more than those of an adult, it is seldom in a degree sufficient to produce a mechanical impediment to the free circulation of air; and as death frequently occurs in children after the false membranes have been expectorated, this result is no longer ascribable, at least in all cases, to the mechanical impediment to the entrance of air into the lungs. The cases and dissections, recorded by M. Louis, prove how rarely this impediment exists in the adult, in whom death takes place notwithstanding the breadth of the larynx; and he inclines to the opinion, that too much stress has been laid upon the mechanical obstruction of the air-passages, as an explanation of the cause of death in children: he imputes more effect to the spasm of the glottis and trachea; an explanation, which he conceives is equally applicable to the adult and the young subject. But, he observes, that it ought not to be forgotten, that the spas-

* Boyer, Traité des Maladies Chir. &c. t. vii. Paris, 1821.

† See Cheyne's Pathology of the Larynx and Bronchia. Edin. 1809.

modic symptoms never occur until the larynx has been lined with coagulable lymph, and hence this lymph, and the inflammation of which it is the production, are, in the opinion of M. Louis, always the primary cause of the spasm. He also adverts to various dissections by himself, M. Lobstein, and M. Viesseux, from which it appears that the lungs and other organs do not exhibit after death the appearances, commonly found in cases of asphyxia. At the same time, he conceives, that the deficiency of respiration has a share in producing the fatal termination, but that the functions of the heart and lungs cease simultaneously, so as to make a difference from asphyxia, strictly so called *. The course of the disease, according to the view taken of it by Dr. Cheyne, is increased action, effusion, laborious respiration, circulation of blood with venous colour, sensorial debility, and death.] Gen. VII. Spec. VI. δE. Bronchlemmitis acuta.

Dr. Harden of St. Petersburgh has of late, after every other remedy had failed, ventured upon cold affusion. He first tried it, in a fit of despair, upon a child of his own, eighteen months old. The child was placed in a bathing-tub, with its belly upon a cushion of hay; and a pail of water, of 12° Reaumur, was then poured quickly from the head along the spine. The symptoms, after the first affusion, soon diminished; the operation was repeated at intervals, ten times, and the child recovered. He has since employed it with like success in the first stage of the disease; and Dr. Miller, another physician of St. Petersburgh, is said to have been, still more lately, as fortunate as himself†. The plan is certainly worthy of further trial. Cold affusion.

Under the genus LARYNGISMUS belonging to the second order of the preceding class, I have observed, that the spasmodic affection there described, from its inducing a sense of suffocation, and possessing various other symptoms resembling those of croup, has often been mistaken for this last complaint, and been denominated spasmodic croup; though without the pathognomonic sign of a membrane-like exudation, and for the most part without any Distinguished from laryngismus.

* C. Ph. A. Louis, Mém. Anat. Pathologiques, p. 245. Paris. 8vo. 1826.

† Extract of a Letter from D. Von dem Busch of Bremen, to Dr. Eberle of Philadelphia, Jan. 6, 1822.

GEN. VIII. SPEC. III. Ophthalmia interna. a Iritis.

Medical treatment.

The medical treatment should consist in free venesection, leeches, active purgatives, and low diet: blisters are then to be applied successively to the temples, behind the ears, and on the nape of the neck. [The body is to be kept perfectly at rest, as well as the organ; and the eye protected from all injurious external influences. According to Mr. Lawrence, local applications cannot be of much service in so serious an affection of parts comparatively internal. Tepid washes, he says, will perhaps be most soothing; but cold applications may be used, if the patient prefer them.

The foregoing antiphlogistic measures will moderate the violence of the inflammation; but the effusion of lymph proceeds, and the above-mentioned alterations of structure are the result. For the stoppage of this destructive action, the free and prompt use of mercury is necessary, which not only stops the further deposition of lymph, but promotes the absorption of what is already effused. Two, three, or four grains of calomel, joined with one-fourth or one-half of a grain of opium, should be given every eight, six, or, in urgent cases, every four hours. When calomel disagrees, the blue pill, or mercurial frictions, may be employed.]

Whether iritis be a primary affection, or connected with other diseases, even with syphilis, or induced by the action of mercurial preparations, Mr. Travers estimates mercury as almost a specific remedy *.

Application and use of belladonna.

[Belladonna is also to be used for preventing that contraction of the pupil, to which there is such a powerful tendency in iritis. If the inflammation be violent, Mr. Lawrence smears the moistened extract upon the eyebrow; when the organ is less irritable, he drops a solution of the extract between the eyelids. This part of the treatment is of the greatest importance, not only in preventing further contraction of the pupil, but because the influence of belladonna on the iris is so great, that where adhesions have already taken place, if the effusion be very recent, the contraction of the iris will elongate the masses of effused lymph, stretch them out, and often completely li-

* Surgical Essays, &c. I. passim.

berate the margin of the pupil. The case, however, must be recent, and the belladonna assisted with the operation of mercury *.] Gen. VIII. Spec. III. Ophthalmia interna.

Mr. Travers distinguishes also inflammation in the iris from that in the cornea, by regarding the latter as suppurative, and leading to an abscess, and the former as adhesive alone. And he tells us, that inflammation of the cornea so strictly maintains this character, that if it spread to the iris, and in this case become merely secondary, it still preserves its adhesive power. α Iritis. Inflammation of the iris, how distinguished from that of the cornea.

This species is also sometimes a concomitant of cutaneous eruptions, decidedly not syphilitic; and especially of those produced by a very extensive use of mercury; constituting what has been denominated by some writers *erythema mercuriale*, and hydrargyria, as we shall take occasion to notice under syphilis. Sometimes a concomitant or sequel of other affections.

In the syphilitic or arthritic affection, however, a particular attention must be paid to the primary disease, since otherwise no local remedies can be of any avail.

*Inflammation of the internal coats of the eye* is a disease that has generally been overlooked by writers, and scarcely discriminated by practitioners. We have seen, that inflammation, commencing in the iris, may extend to the internal coats of the organ, and even to the whole of the eyeball; but, as Mr. Lawrence has explained, sometimes those coats become primarily inflamed. β Retinitis and choroiditis.

The leading symptoms of the first stage are, a dull deep-seated pain in the organ, aggravated by light, or exertion of the eye; impaired vision; with originally, and often throughout, but little external redness. The pain soon extends to the brow, occiput, and other parts of the head. The pupil may be either rather contracted, with a quick motion of the iris; or somewhat dilated, with sluggish motion of the latter part. The former, according to Mr. Lawrence, is the earlier state, denoting excitement of the retina; the latter, a later condition indicating more advanced changes, attended with loss of sensibility in the nervous structure. The disorder is accompanied with febrile symptoms. As the disease proceeds, more sclerotic redness shows itself round the cornea; the iris changes Symptoms, first stage.

* See Lawrence's Lectures.

GEN. VIII. SPEC. III. Ophthalmia interna.

colour and expands; and the sight becomes weaker and weaker, and is soon lost, after which misfortune, the patient is troubled with various false luminous appearances.

β Retinitis and choroiditis. Second stage.

In the second stage, the iris closes, and projects in a convex form towards the cornea; and hypopium is produced by the effusion of matter in the anterior chamber. Complete amaurosis, suppuration, and collapse of the eyeball, and closure of the pupil, are the result of bad cases.

Prognosis.

Greatly impaired vision, produced quickly, with pupil still clear, and not much contracted, Mr. Lawrence says, may be restored; but if sight should have been totally lost before the pupil has closed, or, if that opening be much contracted and vision gone, there is no hope.

Treatment.

The treatment should be antiphlogistic, and followed up by the prompt and free use of mercury, combined with the local employment of belladonna. Bleeding and other antiphlogistic means may check the inflammation; but, unassisted by mercury, they are not adequate to prevent those changes in the retina, which lead to blindness*.

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## SPECIES IV.

## OPHTHALMIA STAPHYLOMA.

### *PROTUBERANT EYE.*

PROTUBERANCE AND PARTIAL OR COMPLETE OPACITY OF THE CORNEA; OR AN UNNATURAL PROTUBERANT STATE OF SOME PART OR PARTS OF THE SCLEROTIC COAT; SIGHT ABOLISHED, OR IMPAIRED.

GEN. VIII. SPEC. IV. Origin of the specific term.

THE term STAPHYLOMA is derived from σταφυλή, "uva," *a grape*, from the resemblance of the tumour or the cornea to the pulpy and semitransparent appearance of this fruit. [The expression, *protuberant* eye, adopted by the author, is not precisely applicable, because the eye may be rendered protuberant by various other diseases.

* For many other valuable observations on this subject, see Lawrence's Lectures.

The definition introduces us to the division into two species: GEN. VIII. SPEC. IV. Ophthalmia staphyloma.

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|---|---|
| α Staphyloma corneæ. | Staphyloma of the cornea. |
| β Staphyloma tunica sclero-ticæ. | Staphyloma of the sclerotic coat of the eye. |

The term *staphyloma corneæ* is applied to a projecting and opaque state of this part of the eye. The whole of the cornea may be involved in the unnatural protuberance; or only a portion of it may be concerned. Hence, the varieties of *staphyloma totale;* and *staphyloma partiale.* In the first case, sight is in general completely lost; the cornea opaque; and the axis of the eye greatly lengthened; but, in the partial staphyloma, if it does not cover a large portion of the pupil, a considerable degree of vision may remain. When the disease embraces the whole pupil, or is accompanied with general opacity, sight is altogether destroyed. The protuberance of the eye interferes with the closure of the eyelids, by the friction of which against the forepart of the eyeball, and by the exposure of the organ to the atmospheric irritation, more or less pain and chronic ophthalmy are excited. α Staphyloma corneæ. Described.

Staphyloma of the cornea is mostly preceded by severe inflammation of the eye, particularly such as produces sloughing ulceration, and a consequently weakened state of the texture of the cornea, disposing it to yield to the distention of the contents of the eyeball. The case is likewise attended with an increased accumulation of the aqueous humour; to which circumstance, indeed, some writers mainly refer the origin of the disease. The irritation has often a sympathetic influence on the other eye, rendering it weak, irritable, and even inflamed. Causes.

The treatment is either palliative, or radical. The palliative consists in the removal of the inflammation by antiphlogistic treatment, or by diminishing the volume of the swelling by puncturing the cornea with a cataract needle, and letting out the aqueous humour. The repetition of this plan has even sometimes led to a radical cure, the protuberance permanently subsiding, and the eye becoming quiet. But, if the patient continue to suffer severely from frequent returns of inflammation, and especially if the other eye should be affected by sympathy, the radical treat- Treatment.

GEN. VIII. SPEC. IV. ment becomes indispensable. It consists in cutting away the staphylomatous protuberance with a common cataract knife.

β Staphyloma tunicæ scleroticæ. Described. When the inner coats of the eye are the seat of considerable inflammation, it sometimes happens, that the disorder so weakens and thins certain points of the sclerotic coat, that they afterwards yield to the distention of the contents of the eyeball, and bulge, or project in a greater or lesser degree, and the protuberance is either single, or more or less multiplied. According to Mr. Lawrence, the disease is particularly apt to occur in that part of the sclerotic coat, which is near the ciliary body. The case is invariably accompanied with total loss of sight.

Part of the sclerotica most liable to the disease.

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## SPECIES V.

## OPHTHALMIA ECTROPIUM.

### *EVERTED EYELID.*

EYE WEAK AND WEEPING, WITH SLIGHT BUT CHRONIC INFLAMMATION; TARSUS THICKENED, AND RETRACTED, WITH A PERMANENT REDNESS ON ITS VERGE.

GEN. VIII. SPEC. V. THIS species is usually a relic or sequel of some form of ophthalmy, in consequence of ill treatment or neglect*. The eversion may be either temporary, or permanent. The latter is common in the purulent ophthalmy of children, and other inflammations, in which the conjunctiva is much swelled. The eyelid in these cases may be easily restored to its proper position again, by the manual assistance of the surgeon, and, indeed, the part generally rectifies itself, as soon as the child ceases to cry.] Ectropium may be contemplated under two varieties: or, according to Scarpa, two species:

α Lippitudo. The ciliary edge red, thickened,

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* Vetch, on Diseases of the Eye, 8vo. 1820.

| | | |
|---|---|---|
| Blear-eye. | and highly irritable, the retraction simple; conjunctiva unexposed. | GEN. VIII. SPEC. V. Ophthalmia ectropium. |
| β Nudum. Naked ectropium. | The upper or lower tarsus completely everted, the conjunctiva exposed, and turgid, with red vessels. | |

General remarks.

The blood-vessels, visible in that part of the conjunctiva which covers the inside of the eyelids, are far more numerous than those observable in that part of it which covers the globe of the eye. And hence, in various species of ophthalmy, the interior of the eyelid is peculiarly apt to become turgid, and very highly inflamed; and, from turgescence, thickens at its edges, and is often so considerably everted as to expose a very large portion of the conjunctiva. And if these effects of inflammation be not duly attended to, both the thickening and eversion are apt to remain and become permanent; nor is this all, for the exquisitely tender membrane of the eyelid, constantly exposed to irritation from cold, sharp winds, dust, a strong light, and excoriating tears, increases in tenderness, is never free from some degree of inflammation, and at length becomes highly vascular, florid, fleshy, and carunculate, *(ectropium sarcomatosum)* and exhibits a very hideous deformity; the everted eyelid sometimes becoming adherent to the cheek. [The frequent occurrence of ectropium as the result of lippitudo, is particularly noticed by Mr. Lawrence in his valuable and practical lectures, who observes that when the mucous membrane of the eyelid has been long inflamed and thickened, and when the irritating discharge has excoriated the skin, the latter shrinks under the repetition of such attacks, becomes shortened, and draws the margin of the eyelid outwards.]

Origin of lippitude.

α O. Lippitudo.

Treatment.

Scarification.

Stimulants and astringents.

In the commencement of the BLEAR-EYE or vascular turgescence, the vessels should be scarified with a lancet; and it will be sometimes expedient to repeat the plan several times; for the operation itself produces a new and more healthy action, and gives a disposition to contractility. The edge and interior of the thickened tarsus should then be attacked with gentle stimulants and astringents; as a solution of alum, zinc, lead, or camphor; or applications of

GEN. VIII. SPEC. V. Ophthalmia ectropium.

the best brandy, vinum opii, or the nitric oxyde of mercury, in the form of the College ointment. [The treatment, recommended by Mr. Lawrence, consists in freely applying the red precipitate ointment to the thickened and everted conjunctival surface, as well as to the ciliary margin of the eyelid. It reduces the swelling of the conjunctiva, and rectifies the secretion of the tarsal glands. In this way, he says, ectropium may often be removed, even when accompanied with much thickening of the conjunctiva. If the latter affection do not yield readily, it may be lightly touched with nitrate of silver. The shrinking, thus produced on the internal surface of the conjunctiva, draws the edge of the eyelid into its natural situation. When the case is more obstinate, and resists the foregoing plans, Mr. Lawrence advises the excision of the surface of the thickened membrane, after which, in proportion as the wound heals, the eyelid is drawn into its right position again.]

β O. Ectropium nudum.

The SECOND VARIETY, or EVERTED EYELID, when of long standing, is accompanied with a hard or horny cicatrix; [and frequently with such a change in the figure of the tarsus, in consequence of its having been long in a stretched state, that, even if the eyelid were replaced, it would not properly adapt itself to the convexity of the globe.] In such cases the only cure seems to be that recommended by Sir William Adams, of cutting out with a pair of scissors a strip of the tarsus in the form of the letter V; afterwards separating the eyelid from the cheek whenever it adheres to it; and, finally, supporting the lid, now raised into its proper place, and confining the edges of the cut eyelid, brought into a state of juxtaposition, by a proper bandage*. The divided edges heal by the first intention; and the cure is often completed in a fortnight, with a restoration of the eyelid to its healthy form.

Treatment, when with a horny cicatrix.

When simple.

Sir W. Adams recommended the same process for the simpler and earlier stages of everted eyelid, or where there is no hard or horny cicatrix, but a morbid turgescence of the internal membrane of the eyelid, often accompanied with granulations; yet, as Mr. Guthrie has given ample

* Practical Obs. on Ectropium, &c. chap. I.

evidence, after Beer*, in both these cases, a skilful application of a very small portion of sulphuric acid to the internal conjunctiva, upon the end of a probe, will of itself suffice to effect a cure, will destroy the minute caruncles, and produce almost any degree of contraction throughout the extent of the eyelid, even to that of an inversion of the ciliary edge, if carried too far †, the operation just noticed should, perhaps, always be reserved for the examples above specified.

Gen. VIII. Spec. V. β O. Ectropium nudum. Sulphuric acid.

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## SPECIES VI.

## OPHTHALMIA ENTROPIUM.

### *INVERTED EYELID.*

TARSUS DRAWN INWARDS, CILIARY HAIRS BENT AGAINST THE CONJUNCTIVA, AND PERMANENTLY IRRITATING AND INFLAMING THE EYE.

Gen. VIII. Spec. VI. Description.

THIS disease is sometimes known by the name of trichiasis. The evil it produces is the reverse of that just described, and consists in an internal traction of the tarsus above or below, in consequence of which a perpetual irritation is produced in the conjunctiva, by the friction of the hairs of the eyelid, thus thrown out of their natural line of growth. The inflammation is in time communicated to the cornea, which becomes opake, and is frequently ulcerated. When the disease has acquired a chronic state, the integuments appear redder than usual, the eyelid is thickened, the conjunctiva is contracted at its commissures, and the tarsus assumes an unnatural curvature.

[Entropium may be either temporary or permanent; partial or complete. According to Mr. Lawrence's interesting lectures, temporary inversion, particularly that of the lower eyelid, is apt to occur in chronic external oph-

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* Lehre von den Augenkrankheiten. Band. II. p. 144. Wien. 1817.

† Operative Surgery of the Eye, &c. p. 58. 8vo. Lond. 1823.

GEN. VIII. SPEC. VI. Ophthalmia entropium.

thalmia, and sometimes even in acute cases. Permanent ectropium may happen, as Mr. Lawrence has remarked, from two causes; there is frequently, in elderly persons, a relaxation of the integuments; the skin of the eyelid loses its elasticity; falls into wrinkles; the fat is absorbed from the surrounding parts; and thus loose folds are formed in it. The balance between the external surface, and the mucous lining of the eyelid is lost, and inversion is the consequence. In another form of the disease, the cause is seated in the tarsus and mucous lining of the eyelid; these parts being corrugated and shortened in consequence of repeated chronic ophthalmies. The temporary ectropium may generally be remedied by putting a small compress against the lower portion of the eyelid, and retaining it there for twelve or twenty-four hours, by a strip or two of sticking plaster, after which time the disease will not return.]

Treatment.

Various plans of cure.

Various plans have been devised for the cure of the permanent form of the defect from the time of Celsus, or rather of Hippocrates. Of these the chief have consisted in a careful attention to remove, and, if possible, prevent the future growth of hairs, either by pulling them out, or destroying their roots with sulphuric acid; a removal of a fold of the skin, and producing an artificial retraction by drawing the extremities of the wound together by sutures or strips of adhesive plaster, as recommended by Scarpa; the plan of destroying a similar portion of skin with caustic, or concentrated sulphuric acid; and lastly, an entire removal of the edge of the eyelid, including the cilia, as proposed by Jaeger, and since performed with little variation by Mr. Saunders.

Of these methods, the first, which is the simplest, rarely, if ever, as Beer has justly observed, produces a permanent cure; [the second and third answer very well in ordinary cases; but the fourth is peculiarly unsightly in the issue.

Crampton's and Guthrie's methods.

When the tarsus is permanently shortened and corrugated, common methods sometimes fail, in which event either Mr. Crampton's plan may be followed, or the modification of it adopted by Mr. Guthrie.] Its principle consists in taking off all contraction, by slitting up the eyelid at each angle, and then producing a sufficient degree of permanent retraction, by taking away a small slip of

the affected tarsus as near the edge as may be, and afterwards uniting the edges of the wound, as already noticed, by small sutures, the threads of which are to be fastened with sticking plaster to the eyebrow, so as to keep the edge of the eyelid duly everted, till the sutures are removed *.

* Operative Surgery of the Eye, &c. p. 33. 8vo. Lond. 1823.—Quadri, Annotazione pratiche sulle Malattiè degli Occhi. Napoli, 1819.—Travers, Synopsis of the Diseases of the Eye. 1810.—Beer, Lehre, &c. ut suprà.

# GENUS IX.

## CATARRHUS.

## *CATARRH.*

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE FAUCES, OFTEN EXTENDING TO THE BRONCHIA, AND FRONTAL SINUSES; INFARCTION OF THE NOSTRILS; SNEEZING; AND, FOR THE MOST PART, A MUCOUS EXPECTORATION, OR DISCHARGE FROM THE NOSE.

GEN. IX. Origin of the generic term.

CATARRH is a Greek compound, and imports "defluxion," from κατὰ, denoting, as stated in the table of significations to the affixes and suffixes of medical terms in the Nosology, "augmented action," and ῥέω, "to flow." Catarrhus, however, like ophthalmia, has been used in various senses and latitudes by different authors. The old pathologists distinguished between three separate terms, which are now regarded by many writers as synonymous:

Different senses applied to it.

> Si fluit ad pectus, dicatur rheuma CATARRHUS;
> Ad fauces, BRONCHUS; ad nares, esto CORYZA.

This couplet is, perhaps, founded upon Galen's account of these affections.

Distinctions of Sauvages.

Sauvages has only deviated from the rule contained in the above Latin couplet by omitting bronchus and employing catarrhus in its stead, and rheuma in the stead of catarrhus; so that with him RHEUMA imports a cold, or febrile defluxion of the chest; CATARRHUS, the same affection of the fauces, and adjoining organs; and CORYZA, the same malady of the head or nostrils.

Arrangement of Cullen.

Cullen has regarded rheuma, coryza, bronchus, and catarrhus as synonymous terms, scarcely indicating varieties of the same disease. The arrangement of Dr. Cullen, moreover, did not allow him to place bex, tussis, or cough, any where else; and being obliged to yield to the force of neces-

sity, he has made cough also a synonym of catarrh, and has treated of it under this genus. It is here the present system differs from Dr. Cullen, as it does likewise in separating coryza from the list of phlogotic affections. Cough is not necessarily a pyrectic or inflammatory disease, though it may be occasionally a symptom of such disease. Cough, therefore, under the Greek term BEX, we have already considered, as well as CORYZA, under the second or PNEUMATIC class; where they will probably be allowed by most nosologists to occupy more correct and natural posts, than in the present place. Catarrh, thus explained, embraces the two following species:

GEN. IX. Catarrhus. Signification in the present system.

1. COMMUNIS. COLD IN THE HEAD OR CHEST.
2. EPIDEMICUS. INFLUENZA.

Under neither of these species can catarrh be regarded as a dangerous or very serious disorder, unless neglected or treated improperly; or it occur with great severity in persons of delicate lungs, or possessing a consumptive diathesis; in all which cases, its result may be very mischievous, and lead on either to pneumonitis, bronchlemmitis, phthisis, or dropsy of the chest, though in itself, and separate from such concomitants, by no means alarming.

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## SPECIES I.

## CATARRHUS COMMUNIS.

### *COLD IN THE HEAD OR CHEST.*

FEVER SLIGHT; MUCOUS DISCHARGE CONSIDERABLE.

GEN. IX. SPEC. I. Synonyms.

THIS is the *pose* of old English writers, a term precisely synonymous with the *gravedo* of Celsus, which is also employed in the earlier medical works of our own country. To *pose* is still used in the sense of to stupify, and the real meaning of posie is a "narcotic charm," and hence a nosegay of tranquillizing odour inducing repose or sleep.

GEN. IX. SPEC. I. Catarrhus communis.

Description.

The common symptoms of this species are a sense of fulness in the head, and of weight over the eyes, which are inflamed and lachrymose. The nostrils are obstructed, and pour forth a thick acrimonious ichor, which excoriates the skin as it descends, accompanied with frequent sneezing. The voice is hoarse, the fauces sore, and the lungs loaded, often producing a troublesome cough.

Causes

Its usual cause is suppressed perspiration from cold; whence Dr. Cullen conceives, that cold is the constant and only cause, and would in every case be detected to be such, were men acquainted with, and attentive to, the circumstances which determine cold to act upon the body.

From the similarity between the fluid exhaled from the skin and that from the lungs, he conceives that, whenever the former secretion is obstructed in its flow, it is transferred to, and passes off with the latter; the cough being produced by the stimulus of the increased action, and exhalation.

Something more than cold as a cause at times.

There seems, however, to be, in many cases at least, something more than this; for neither cold nor suppressed perspiration will account for every instance of common catarrh. There are few practitioners, perhaps, but have sometimes known persons thus affected who have been bedridden from chronic lameness or some other cause, and have had their chamber warmed night and day by a fire. Some ladies always catch a cold in the head on quitting the town for the country; and others on quitting the country for the town. Something must therefore depend on the actual state of the constitution at the moment; and something upon the variable quality of the atmosphere: and a change in both frequently perhaps concurs in producing the affection of a common catarrh.

Curative process.

Where the attack is slight, medical aid is not often sought for or needed. A few days of domestic repose in a warm but not a close atmosphere, diluent drinks, with an abstinence from animal food, and vinous or other fermented liquors, a sudorific posset at night, with an additional blanket thrown over the bed to encourage perspiration, usually succeed in carrying off the complaint. But if there be a sense of oppression on the chest, or of fulness in the head, with the ordinary signs of fever, constituting what is often called pulmonary catarrh, the bronchitis of Dr. Bad-

ham, venesection should be had recourse to, and a smart purgative immediately afterwards, while the preceding process is still continued. If the cough should be troublesome at night, it will be best allayed by a dose of Dover's powder, which will take off the irritation, and determine to the surface. GEN. IX. SPEC. I. Catarrhus communis.

Catarrh is also found occasionally, as a symptom, in measles, small-pox, worms, dentition, and rheumatism.

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## SPECIES II.

## CATARRHUS EPIDEMICUS.

### *INFLUENZA.*

THE ATTACK SUDDEN; GREAT HEAVINESS OVER THE EYES; FEVER STRIKINGLY DEPRESSIVE; EPIDEMIC.

GEN. IX. SPEC. II. How distinguished from the preceding species.

THIS species differs chiefly from the preceding in the abruptness of its incursion, the severity of its symptoms, and very generally in the rapidity of its transition. It probably also differs in the nature of its remote cause.

Description.

It commences, according to Dr. J. C. Smith, who has accurately given us its progress as it appeared in 1781 and 1782, with the usual catarrhal symptoms, in conjunction with others that are far more distressing to the patient, and often not less alarming to the physician; such as great languor, lowness and oppression at the precordia; anxiety, with frequent sighing, sickness, and violent head-ache. The pulse is peculiarly quick and irregular, and at night there is often delirium. The heat of the body is seldom considerable, particularly when compared with the violence of the other symptoms; the skin is moist, with a tendency to profuse sweating; the tongue moist, but white or yellowish. Sometimes there are severe muscular pains general or local; at other times, erysipelatous patches or efflorescences on different parts of the body, which, in a few rare instances, have terminated in gangrene and death. From the onset, for the first twenty-four or forty-eight hours,

GEN. IX. SPEC. II. Catarrhus epidemicus.

the symptoms are extremely violent, far beyond the danger or duration of the distemper. For the most part, it attacks the healthy and robust; children and old people either escape entirely, or are affected in a slighter manner. Pregnant women, however, are disposed to miscarry, and the flooding is in some cases fatal. Patients also, subject to pulmonic complaints, suffer much from the cough, difficulty of breathing, and other peripneumonic symptoms, which occasionally lead on to dissolution*.

Symptoms vary in severity in different cases.

Such is the general progress of influenza in most of the periods in which it has shown itself. But, in every period, its symptoms have considerably varied in severity in different individuals. In many instances, they have scarcely exceeded the signs of a common cold; in others, the pleuritic pain has been very acute, or the head-ache intolerable, shooting up to the vertex with a sense of splitting; the pulse has been a hundred and forty, and often considerably more, in a minute, with incoherency or delirium from the first night. Yet cases of real danger are very few; and the violence of the disease is over frequently in forty-eight hours; sometimes in twenty-four. Those who have suffered appear to be insusceptible of a second attack during the continuance of the epidemy, though they have no indemnity against the next that may appear. In many cases, however, the general debility, induced on the system, does not terminate with the catarrh itself, but remains for weeks, perhaps for months, afterwards, and is sometimes removed with great difficulty.

Sometimes succeeded by great chronic debility.

Disease described by the Greek writers.

How regarded by Sydenham.

The disease has been known and described from the time of Hippocrates to the present day: and is dwelt upon at great length by Sydenham, who regarded it in the autumn of 1675 as a general cough produced by cold and moist weather, grafted upon the autumnal epidemy, and varying its symptoms; whence the fever, which had hitherto chiefly attacked the head or the bowels, now transferred its violence to the thorax, and excited symptoms which had often a semblance to those of genuine pleuritis, but in reality were not so, and demanded a different and less evacuant treatment; the patient being uni-

* Medical Communications, vol. i. p. 71.

formly made worse by copious and repeated bleedings; though a single moderate venesection was often useful, and in a few instances a second: beyond which Sydenham always found it mischievous to proceed. And in proof that this was the real nature of the case, he observes, that "these catarrhs and coughs continued to the end of November, after which they abated, but the fever still remained the same as it was before the catarrhs appeared;" meaning that it then returned to its essential character: "although," he continues, "it was neither quite so epidemic, nor accompanied with quite the same symptoms; *since these incidentally* depended upon the catarrhs."

GEN. IX. SPEC. II. Catarrhus epidemicus.

Influenza, however, as we shall have occasion to show presently, has not only occurred in the autumn, but in every season of the year, whether hot, cold, damp, or temperate; and when there has been apparently no other constitutional distemper with which it could unite itself. The chief returns of the disease, which have been remarked in this country since the above of Sydenham, are those of 1732, 1762, 1775, 1782, and 1803; the duration of the epidemy was in every instance from a month to six weeks. That the disease is an epidemy, cannot be doubted for a moment: yet this is to advance but a very little way towards a knowledge of its origin or remote cause; for we have still to inquire into the nature of epidemies, their sources, diversities, and means of diffusion; often, as in the case of spasmodic cholera, in the very teeth of periodical winds and other meteorological phenomena that we might fairly conclude, if we did not know the contrary, would irresistibly oppose their progress, or disintegrate their principles, and consequently abolish their power. Dr. Sydenham, with the modesty which peculiarly belongs to himself, and always characterises real knowledge, freely confesses his ignorance upon the subject, though he is rather disposed to ascribe them to "some occult and inexplicable changes wrought in the bowels of the earth itself, by which the atmosphere becomes contaminated with certain effluvia, which predispose the bodies of men to some form or other of disease;" while Hippocrates, who had pursued the same recondite subject with an equally indefatigable spirit upwards of two thousand years before, resolves them with a devotional feeling which

Unquestionably an epidemy:

often returning:

though the causes and nature of epidemies but little known.

GEN. IX. SPEC. II. Catarrhus epidemicus.

would do honour to the philosophy of the present day, but which the philosophy of the present day has not always evinced, into a present divinity, a providential interposition; for such, as Galen informs us, is the actual meaning of his TO ΘEION *, and not some unknown and latent physical principle of the atmosphere, as various expositors have conceived: "non enim quæcunque causas habent incognitas et abditas DIVINA vocamus; sed ubi admirabilia videntur duntaxat †."

Still further examined as to probable causes.

An epidemy, however, or state of the atmosphere capable of producing any general disorder, whether originating specially or in the ordinary course of nature, may depend upon an intemperament, or inharmonious combination of the elementary principles of which it consists, or upon some foreign principle accidentally combined with it, and which has of late years more especially been called a miasm or contamination. It is possible, that both these may be causes of different diseases; and, in this case, the term epidemy might be more correctly limited to those which issue from the first cause than from the second: and Dr. Hosack has endeavoured thus to limit it. But as it is rarely that we can distinguish between the two, and especially as the term has been very generally applied to diseases arising from both sources, it is not worth while to alter its common signification.

Influenza how accounted for. Sometimes traced to the first of the above causes.

In the disease before us, many writers have endeavoured to trace it to the first of the above causes, and particularly to the atmosphere's being in a state of negative electricity; and Weber, fully confiding in this cause, has recommended, somewhat whimsically, the use of socks made of the most powerful non-conductors, as oiled-silk, or paper covered with sealing-wax, as a certain prophylactic ‡. Others, without undertaking to determine in what the atmospheric intemperament consists, have regarded it as a mere exciting cause of catarrhs, or, in other words, as merely rendering the body more susceptive of the ordinary causes of this disease, and hence converting a sporadic into a general distemper.

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* De Prognost. lib. i. † Comment. in Progn. Hipp.

‡ Rahn. Briefwachsel, mit seinen chemalignen, Schülern. Band. ii. Zürich, 8vo. 1787.

More commonly, however, catarrh as well as other epidemics has in modern times been contemplated as dependent upon the second of the aërial causes just adverted to, namely, the existence of a specific miasm, or morbid principle of a peculiar kind in the atmosphere, distinct from any change in the combination of its proper elements*: and hence, Professor Frank, after adverting to the "in ambiente nos aëre mutatio," adds, "non sine magnâ latentis contagii suspicione†." There is much, indeed, to support this opinion; for in many cases, as in intermittent and remittent fevers, we can manifestly trace such an origin; and, as we have already shown that contagions and miasms are often identic or nearly so, the former may be brought forward as abundantly confirming the same view.

Gen. IX. Spec. II. Catarrhus epidemicus.

More generally to the second.

This identity, or approach to identity, between contagions and miasms, is closely connected with the present subject, and must be a little examined into for its clearer elucidation.

Identity of contagions and miasms.

In treating of the origin and laws of febrile miasm, we observed, that it is of two distinct modifications, or proceeds from two distinct sources: that, in its ordinary course, it first appears as the result of a decomposition of dead organized matter, operated upon by the common auxiliaries of putrefaction: but that afterwards, "during the action of the fever thus produced, the effluvium from the living body is loaded with miasm of the same kind, completely elaborated as it passes off, and standing in no need of the decomposition of the effluvium for its formation; under which form, it is commonly known by the name of contagion."

I may now add, that as primary febrile miasm is not the only miasm generated in the atmosphere, so it does not seem to be the only miasm that gives rise to contagion: that both are very numerous in their kinds, and that specific contagions are, though perhaps not always, yet far most generally, a result of specific miasms produced as above. This seems especially to be the case

Doctrine applied to influenza.

* See especially De Mertens, Observ. Med. tom. ii. 4, and Simmons, Lond. Med. Journ. 1788. P. iv.

† De Cur. Hom. Morb. Epit. v. pp. 118, 119.

GEN. IX. SPEC. II. Catarrhus epidemicus.

in respect to influenza; for though most individuals labouring under it are evidently affected from an atmospheric taint, many, as we shall show presently, appear as in the case of remittent or typhous fever, to receive it from personal contagion: nor is there, in fact, any reason why a puriform discharge from the mucous membrane of the nostrils may not be contagious, as well as a puriform discharge from the mucous membrane of the eyelids in ophthalmy, or from the urethra in blenorrhœa, or, as we shall shortly have to notice, from the rectum in dysentery. Among dogs and horses we perceive the same disease, in many instances highly and extensively contagious, and accompanied with so violent a degree of fever as to be peculiarly dangerous, especially to the young of these kinds. In South America, in particular, this affection is so violent, that half the dogs pupped there are supposed to die of it while sucklings. Whence in common language it is called emphatically *the distemper*, though vulgarly, the *snaffles*, or rather *snuffles*, from the state of the nostrils. In nosology, it is commonly called *catarrhus caninus*.

Hence influenza produced by contagion and miasm.

Illustrated from diseases in other animals.

Distemper among dogs, what.

Specific diseases of one kind of animals rarely attack others.

Generally speaking, specific miasms and contagions, capable of affecting one kind of animals, are incapable of affecting any other kind; or at least rarely extend their influence any further. In a few febrile pestilences, quadrupeds and birds seem to have been fellow-sufferers with mankind, as we have already had occasion to notice under EPANETUS MALIGNUS, or malignant remittent fever. But this is not common; and, in some instances, is well known to have depended upon the general dearth of a country, or the insalubrity of the preceding harvest. A few of the exanthems, as cow-pox, are capable of propagation from one species to another; but the greater number of them are not, or only with great difficulty. When a putrid fever has broken out among a ship's crew, the live stock has never been known to suffer from it: and it has happened occasionally, when large numbers of sheep and hogs have been stowed in a ship for the purpose of exportation, sometimes the former have been attacked with contagious fever, and sometimes the latter; but the sheep never communicated it to the hogs, nor the hogs to the sheep, nor either of them to the ship's crew. "It

Illustrated.

seems to be a general law of nature," observes Sir Gilbert Blane, " at least among the mammalia, that accumulation and stagnation of the exhalations of the living body produce disease. The glanders of horses arise only in large stables, and the distemper of dogs in kennels. During the American war, it was proposed to send live shee from England across the Atlantic. In a few weeks, in consequence of being crowded in a ship, they all died of a febrile disorder."—" In the expedition to Quiberon in 1795, several horse-transports had their hatches shut for a length of time in a storm, by which means eight horses were suffocated. Those which survived became affected with the glanders soon after they landed. Professor Colman saw twenty of them under this disorder; a considerable number had been previously destroyed *." It does not appear, that, in either of these instances, the respective disorders were communicated from one genus or species of animals to another.

Glanders of horses from concentrated effluvium of their own kind only. Sheep affected from like cause and with like limitation.

That the catarrh before us possesses not only an epidemic character, but is dependent on atmospheric influence, is established by so many well known proofs, that it is hardly worth while to give examples. Of a dozen persons in perfect health in the same room, ten have often been attacked as nearly as possible at the same time. In the influenza of 1782, three families, consisting of seventeen persons, arrived on the same day at an hotel in the Adelphi, all in perfect health. The next day they were all affected with the symptoms of the reigning disease †. In an hospital, containing a hundred and seventy persons, more than a hundred were, on one occasion, attacked within twenty-four hours; and few of the remainder escaped afterwards.

We have said, however, that the middle-aged, the strong, and the robust are affected soonest, and suffer most severely, while the young and the old are less susceptive of its influence. In proof of this, we may advert to the fact, that healthy and well disciplined soldiers suffer peculiarly. In 1782, this was especially the case at Aberdeen: at Dublin there were, at the same period, seven hundred

* Med.-Chirurg. Trans. iv. 89. 475. † Med. Trans. vol. iii. p. 59.

GEN. IX. SPEC. II. Catarrhus epidemicus.

soldiers confined under it in their barracks at once, and incapable of doing their duty *; while at Utrecht the number amounted to not less than three thousand. On the contrary, out of seven hundred boys in Christ's Hospital, during the same epidemy, only fourteen had the disease, and all of them in the slightest manner †.

Proofs of communication by contagion.

The proofs of communication by personal contagion are not less decisive. "The first," says Dr. Hamilton, describing the influenza of 1782, "who were seized with it at Norwich, were two men lately arrived from London, where it then continued to rage. A sergeant of grenadiers in the 10th regiment of foot went to London on furlough: the disease then raged in the capital. He returned, in a few days, to St. Alban's, affected, and communicated it to the people in whose house he had his billet. This was the first of its appearance there: and from thence it spread rapidly all over the town ‡."

General phænomena unvaried from an early period.

Dr. Cullen in his Synopsis has followed the more striking returns of influenza from the fourteenth century down to the present times; or rather from the Cronica Meteorologica Toscana of 1323, by *Targioni Tozzetti*, to *Saillant's* Tableau des Epidemies Catarrhales. "In all these instances," says he, "the phenomena have been much the same; and the disease has always been particularly remarkable in this, that it has been the most widely and generally spreading epidemic known. It has seldom appeared in any one country of Europe, without appearing successively in every other part of it." And, in some instances, the infection has passed the Atlantic with little or no remission of its severity, and attacked Americans, who had not had the slightest intercourse with Europeans.

Extensive range of the epidemy.

And hence we are capable of tracing it at sea as well as on land. In the epidemy of 1782, Lord Howe sailed in the month of May with a fleet for the Dutch coast; and Admiral Kempenfelt for that of France. The crews of both fleets were well on sailing: but, in the same month, both were attacked very generally, and the latter was obliged to return home. The previous state of the air,

* Dr. Hamilton, Mem. Med. Soc. of Lond. 1782.

† Med. Trans. vol. iii. p. 56. ‡ Mem. Med. Soc. of Lond. ut supra.

with respect to any of the sensible qualities of heat, cold, electricity, or damp, seems to have exercised but little power. Influenzas, as already observed, have recurred at every different season, in every state of the barometer, thermometer, and hygrometer.

GEN. IX. SPEC. II. Catarrhus epidemicus.

Little influenced by meteorological changes.

Thus the influenza of 1762, one of the severest on record, producing effects which continued, in many instances, for two or three years afterwards, was preceded by weather uncommonly warm; while in that of 1767, being the next in rotation, which was also very severe though productive of less durable mischief to the constitution, the weather was remarkable for being unusually cold*. We know nothing of the country, from which the disease has at any time taken its rise; but it has frequently seemed to proceed from north to south, though it has occasionally travelled from west to east. That of 1781 and 1782 is said to have originated in China, and to have travelled through Asia into Europe; whence it crossed the Atlantic, and arrived the ensuing year in America. But this assertion wants confirmation. If we allow its materies to depend upon specific miasm floating in the atmosphere, we can only account for its preserving its agency so long, and operating in such distant theatres, by supposing that its particles are with great difficulty dissolved or decomposed in the air, even when in its purest state or highest degree of agitation by tempest. Of the specific miasms we are a little acquainted with, some seem to dissolve or lose their power much more readily than others, and hence spread their influence through very confined peripheries; while others are only dissoluble in a pure atmosphere, and consequently retain all their virulence in an air already saturated with other foreign elements.

Chronology of the chief influenzas.

The chief influenzas that have visited Europe within the last three centuries, occurred in the following order of time: 1510; 1557; 1580; 1587; 1591; 1675; 1709; 1732-3; 1743; 1762; 1767; 1775; 1781 and 1782; since which period, the return of the disease has been little noticed in respect to extent or violence.

Remedial treatment.

The remedial treatment needs not detain us long, not-

* Dr. Heberden, Med. Transact. I. art. XVIII.

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withstanding the violence with which the disease makes its assault. Bleeding, as we have already observed, is rarely required, and, from the debility so soon induced, should be avoided, except in urgent pleuritic pains, which are not common. It was tried copiously by many practitioners in 1782, but they soon reverted to the cautionary track of Sydenham. Quiet, diluent drinks, and the promotion of that easy breathing perspiration which Chenot has distinguished by the name of diapnöe, will usually be found sufficient, if the bowels be kept free from confinement. If the chest be much loaded, an emetic will afford the best relief. And if the cough be troublesome, and the breathing laborious, both which, however, are generally alleviated by an emetic, small doses of ipecacuan, with or without oxymel of squills, will promote an easy expectoration, and take off the sense of oppression. Dr. Cullen joined these with opium, and was particularly attached to the use of Dover's powder in all catarrhal affections, asserting that there is no disease, in which opium has been found more useful*. But it generally agrees better in common catarrhs, than in influenza. The subsequent debility may be removed by a free use of the bark, gentle exercise, pure air, cold bathing, and a liberal regimen: which last, indeed, should be continued through the disease itself. The cough, occasionally produced, remains sometimes as a sequel, long after the other symptoms have disappeared: and, in this case, opium with camphor or the resinous balsams, or the extract of hemlock or of hyoscyamus, prepared in a steam-heat, often affords essential relief, and especially at night; yet it has not been found, that even the symptom of a cough has proved any impediment to the use of the bark, or even that of cold bathing, or been augmented by the practice, as influenza has rarely terminated in phthisis; and, according to Dr. Carmichael Smith, is less disposed to produce this complaint than a common catarrh.

Treatment.

Subsequent symptoms how removed.

* Mat. Med. Part II. ch. vi.

# GENUS X.

## DYSENTERIA.

### *DYSENTERY. BLOODY FLUX.*

INFLAMMATION OF THE MUCOUS MEMBRANE OF THE LARGER INTESTINES; GRIPING AND TENESMUS; FREQUENT AND OFTEN BLOODY DEJECTIONS; THE FECES IRREGULARLY DISCHARGED.

GEN. X.

Most frequent in autumn.

Illustrated.

DYSENTERY is far more frequent in the autumnal months, than in any other season of the year. The animal frame is at this time generally relaxed and debilitated by a long exposure to the stimulus of a high atmospherical temperature, and in many cases to that of the direct rays of the sun. The digestive organs and intestinal canal necessarily partake of this debility, and are more easily irritated and thrown out of the order of health, than at any other time. Hence diarrhœas and colics, and that hepatic flux which by some writers has been regarded, but erroneously, as a variety of dysentery. And hence also, proper dysentery; which, in a particular state of the intestinal canal, is excited rather than any of the rest, by causes that are perhaps common to the whole.

Causes.

These causes may be DIRECT or SYMPATHETIC: and as most of these are peculiarly incidental to hot climates, we may readily perceive why dysentery should be more prevalent in them, than in other situations.

Direct causes.

The DIRECT CAUSES are chiefly those of diet; and may consist of any sudden application of cold to the stomach very much below its actual temperature, as drinking cold water or eating confectionary ices when in a state of considerable heat; eating flatulent herbs, unripe or subacid fruits, and especially to excess; or food of little nourishment and difficult of digestion; drinking impure water, and especially when impregnated with the decomposing elements of animal or vegetable substances. In this last case, as well as in one or two of the preceding, the

Striking effects of impure water.

GEN. X. Dysenteria.

disease is often endemic, and extends to almost every one who is under the influence of such a cause: of which a striking example occurred, not many years ago, among the soldiers stationed in the old barracks at Cork. While the disease was raging with great violence, it was observed by Mr. Bell, the temporary surgeon, that the troops were supplied with water contaminated by an influx from the public sewers, and rendered brackish by an intermixture with the tide. He instantly changed the beverage, and had the barracks supplied by water-casks from a spring, called the Lady's Well, when the disease almost immediately ceased*.

Other examples.

We meet with various examples of a like kind. Thus Rolander, while residing with Linnéus, was repeatedly attacked with this affection, which he ascribed to drinking stagnant water contained in a cistern of juniper-wood. In this cistern was discovered a species of acarus, which Linnéus, who was fond of resolving almost all diseases into an animalcular origin, immediately regarded as the source of the complaint, and specifically distinguished by the name of acarus *dysenteriæ*†.

Acarus dysenteriæ.

Sympathetic causes.

The SYMPATHETIC CAUSES are those which operate on the intestines through the medium of other organs, chiefly of the skin, or the lungs; as exposure to currents of cold air when the body is heated; wet clothes and wet feet, producing, like the last, a sudden suppression of perspiration. And hence a damp marshy soil, or sudden changes in the atmosphere from hot and dry to cold and moist.

Effects of impure air

And as, in the autumnal months, we find the bowels apt to be directly affected by water contaminated with peculiar impurities, we have reason to believe, that they are also apt to be affected by air contaminated in a particular manner, though we cannot easily trace the specific nature of the taint. And hence the disease assumes an epidemic, as in the former case, an endemic range.

apt to combine with autumnal fevers:

But the autumn, which thus peculiarly favours the origin of dysentery and other intestinal affections, gives a like tendency, as we have already seen, to various fevers, and especially to bilious and intermittent. With all these

* Dr. Cheyne in Dublin Hospital Reports, &c. vol. iii. p. 11.

† Amœn. Acad. vol. v. 82. et alibi.

dysentery is particularly disposed to combine, by which the disease is rendered far more complicated; or excites in them a transfer of action, so as to turn aside, in many instances, their regular tenor, and run away with their violence.

GEN. X. Dysenteria.

hence the disorder often complicated.

When dysentery is accompanied with atonic fever, and a copious discharge of mucous, purulent, bloody, or filmy matter, evidently the result of intestinal ulceration, it is frequently presumed to be contagious; but whether the matter of contagion is thrown forth from the body of the sick, or from the putrescent recrements, has been a disputed point. But the grand question is, whether dysentery ever exists without contagion? or, in other words, whether when the disease exists without those virulent symptoms which are deemed indicative of contagion, it is entitled to the name of dysentery?

Hence often contagious.

Whether ever void of contagion.

Dr. Cullen, who, if he did not first start this controversy, has followed it up with a more peremptory opinion than perhaps any other writer, has contended for the negative of the question; and has hence not only arranged the disease under his class PYREXIÆ, but generically distinguished it by his character of PYREXIA *contagiosa:* asserting in his Synopsis that he has never met with more than one species; and still more distinctly in his First Lines, that "the disease is always contagious," and that the contagion is probably at all times specific *.

According to Cullen always contagious when genuine dysentery:

[On the other hand, Sydenham makes no mention of any contagion attending the epidemic dysentery, which he has described; and Willis, who speaks of the same epidemic, expressly asserts, that it was not contagious.

Although Dr. Bateman believed dysentery to be contagious in camps and hospitals, he never found the disease, as it occurs in this metropolis, to partake of this character. He states, that the disease was common in London in a sporadic form in the autumn of 1808; yet, that he never once knew it pass to a second person in any family, while its origin could be often satisfactorily traced to exposure to cold and moisture. He was therefore disposed to consider Cullen's doctrine as erroneous †.

* Part I. Book V. chap. ii. sect. MLXXV.

† Rees's Cyclopædia, art. DYSENTERY.

GEN. X. Dysenteria. The epidemic dysentery which prevailed at Glasgow in the autumn of 1827, and which has been described by Mr. Brown, is also stated by that gentleman not to have been infectious*.]

and the contagion specific: Dr. Parr and Dr. Young make a nearer approach to the general opinion of Dr. Cullen, than any other nosologists that I am acquainted with. They regard the disease as an inflammatory affection; but differ from Dr. Cullen inasmuch as they do not believe it to be essentially and at all times contagious: the former limiting himself to the expression that it is *generally* so; the latter, that it is *often* so.

though some writers pay no attention to its possessing contagion or fever. The earlier nosologists, however, have laid little or no stress on either the pyrectic or the contagious character of the disease; and hence in Sauvages, Linnéus, Vogel, Sagar, and Macbride, it occurs as a genus under the division, not of fevers but of fluxes, without any notice of fever or contagion except as a distinctive symptom in some of their species.

Dispute continued among modern tropical writers. The practitioners in warm climates, and even the monographic and clinical writers of our own country to the present moment, are as little agreed upon the subject of a specific contagion. Pringle, Hunter, Harty, Balfour, and Chisholm, contend strongly for the existence of such a principle—the last of whom asserts that "few diseases are more apt to become contagious†. Johnson, Ballingall, Bampfield, and Dr. L. Frank, either deny it altogether, or have not met with any instance of it in their own practice. [Dr. Renton also, in his description of the dysentery of Madeira, distinctly affirms, that "the disease is certainly not contagious. The lower orders of the inhabitants, its principal victims, live huddled together in close crowded sties; but (says Dr. Renton) I have never seen two cases in the same family at the same time‡."] So in the late alarming attacks of this disease in Ireland, it was not regarded as contagious *at that time* at Cork, by Dr. Barry§,

How regarded of late in Ireland.

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* Glasgow Med. Journ. vol. i. p. 55.

† Climate and Diseases of Tropical Countries, p. 54. 8vo. 1822.

‡ See Med. Chir. Trans. of Edinburgh, vol. ii. p. 376.

§ Dublin Hospital Reports, &c. vol. iii. p. 10.

or at Limerick by Dr. Perston*: while Dr. Halloran, practising also at Cork†, observes that it was obviously contagious on many occasions; Dr. Poole that it was contagious at Waterford‡; Mr. Dillon that it was the same at Clonmell§; and Dr. Cheyne, to whom we are indebted for the best, as well as the most extensive, clinical history of this disease, that it was at Dublin in some cases contagious, and in some not: being decidedly so when connected with continued fever; and uncontagious in its simple form, or when combined with an intermittent. This last opinion harmonizes most with the present author's experience; and especially when the disease has been epidemic or endemic.

Gen. X. Dysenteria.

Cheyne.

When contagious and when not.

This view has the full countenance of another very able and experienced writer of our own day, Dr. O'Brien, of Dublin. He has never found the disease decidedly contagious; but supposes it may become so when the disease is epidemic, and the accompanying fever, in camps or other crowded stations, assumes a malignant or typhous form‖; being, in effect, the opinion offered concerning it many years ago by Dr. Harty¶.

O'Brien.

In truth, we meet with a like associate process in influenza, from an inflammatory affection and increased secretion in the mucous membrane of the nostrils, instead of in that of the colon: for we have already seen, that the disease at first simply epidemic or atmospherical, at length becomes contagious, and is capable of communicating its like to whatever distance the patient may be removed from the line of tainted atmosphere. And we are hence enabled to enter fully into the following variety of causes, traced out on the spot by Dr. Cheyne in the late extensive call upon the whole of his judgment and talents. "I have analyzed ninety-eight cases. Thirty-three arose during recovery from fever: fifteen while the fever was in progress: fifteen from cold, or cold and wet: four from indigestion. The rest were doubtful: but many had been exposed to febrile contagion, and nine in close communication with patients labouring under dysentery: four had been nurses in wards

Principle paralleled in influenza.

Patholo gical analysis of Cheyne.

* Id. p. 21. † Id. p. 9. ‡ Id. p. 7. § Id. p. 5.

‖ Obs. on the Acute and Chronic Dysentery of Ireland, &c. Dublin, 1822.

¶ Obs. on Simple Dysentery and its Combinations, 8vo.

GEN. X. Dysenteria.

where the disease had occurred: four had slept with dysenteric patients, of whom one had used the same night chair*." We may here readily subscribe to his own language and say, "it has rarely fallen to the lot of a physician in civil life, possessing all the advantages of books, and of consultation with skilful and experienced colleagues, to witness dysentery upon such a scale."

[In a later paper on the subject, Dr. O'Brien speaks of one of his patients, who supposed, that he caught the disease either by lying near another person affected with dysentery, or by using the same night chair. One other instance occurred, Dr. O'Brien remarks, in which a tolerably strong presumption at least existed of the propagation of the disease by contagion; viz. the case of Kelly, the whole of whose family, amounting to six in number, were attacked in succession. But Dr. O'Brien has met with no other strong, or probable instance of the communication of the disease by contagion†.] Dr. Cheyne tells us, that Dr. Prevost of Geneva, at that time one of the clinical clerks of the Whitworth Hospital, conceived he had contracted the disease he was then labouring under, in the *dissecting-room*, where he spent much of his time, *hanging over the bodies* of those who had died of dysentery‡.

Sometimes becomes chronic.

When the disease has run through its acute stage with great severity, but without destroying the patient; and, not unfrequently, perhaps, when it has been something less severe, but unskilfully treated, it assumes a chronic character, exhibits symptoms peculiar to itself, and, as Sydenham observes, will continue to afflict the patient for several years. In this case, the structure of the liver, as well as that of the intestines, is almost always injured. If the lesion be not considerable, the patient may at length recover; but very generally the termination, though protracted, is still fatal. Dr. L. Frank, indeed, regards it as even more fatal, than in the acute form.

In this form dysentery sometimes primary.

It is not always that the disease under this shape is a sequel of acute dysentery, and especially among those who

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* Medical Report, &c. p. 18.

† Trans. of King's and Queen's College of Physicians, vol. v. p. 227. Dublin, 1828.

‡ Dublin Hosp. Rep. vol. iii. p. 18.

have predisposed themselves to it by an antecedent life of intemperance. Dysentery has on this account, of late years, by many writers both at home and abroad, been divided, as a genus, into the two species of acute and chronic, the pyrectic form being contemplated as a variety of the acute division: Gen. X. Dysenteria.

1. DYSENTERIA ACUTA. ACUTE DYSENTERY.
2. ——————— CHRONICA. CHRONIC DYSENTERY.

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## SPECIES I.

## DYSENTERIA ACUTA.

### *ACUTE DYSENTERY.*

FECES DISCHARGED WITH DIFFICULTY, MOSTLY IN SMALL QUANTITIES, AND ALTERNATING WITH THE MUCOUS OR BLOODY DEJECTIONS; PAIN OR TENDERNESS IN THE ABDOMEN: TERMINATING WITHIN A MONTH.

Gen. X. Spec. I.

Bowel complaints why most frequent in summer and autumn:

why less common now than formerly.

We have already observed, that the atmospheric temperaments, chiefly calculated to produce severe bowel complaints, are those of summer and autumn; when the liver is excited to a larger secretion of perhaps more pungent bile, from the greater heat of the weather; the skin is exposed to more sudden transitions from free to checked perspiration; and the exhalations that rise so abundantly from marshes and other swamps, too often give an epidemic character to the atmosphere, and lay a foundation for intermittent and remittent fevers: and we may hence see why dysenteric and other bowel affections, like intermittents, were far more common in our own country about a century ago, than they are at present; the soil being more generally drained, and the atmosphere less humid.

We have here also sufficient ground for local and general affection, and may readily see how it is possible, from the operation of one of these causes singly, or of two or all

GEN. X. SPEC. I. Dysenteria acuta.

of them jointly on an irritable state of the intestines, for all or any of the local symptoms to be produced which enter into the generic or specific definition of the disease before us; as also how it is possible for these symptoms to be combined with fevers and other disorders of various kinds and various degrees, so as to render the complaint peculiarly complicated and dangerous; though we have not yet been able to find out what are the precise causes that, operating locally, produce the distinctive symptoms of dysentery, rather than those of diarrhœa, cholera, or any other irritation, or spasmodic action of the intestinal canal. This may, perhaps, sometimes depend upon idiosyncrasy, sometimes upon accident, and, in the severer cases, upon contagion or a specific miasm.

and hence dysentery in the same seasons, alone or combined with other diseases.

General seat of the disease.

The symptoms, however, already noticed sufficiently point out the general seat of the disease: the tormina or griping pains, the region most affected by them; and the costiveness or nodules of feces that are dejected, the existence of spasmodic constriction in or about the colon, or the upper part of the large intestines. And while such is the state of the canal above, the excessive straining or tenesmus, accompanied with a discharge of simple or bloody mucus, shows, as distinctly, the existence of great irritation in the sphincter or its vicinity. In some cases, one of these parts is more affected; and in some, another; and hence the origin of most of the disputes concerning the precise spot of the disease.

Sometimes one part more affected than another; and hence disputes concerning its immediate seat.

Ordinary exciting cause, suppressed perspiration from cold.

The ordinary exciting cause, however, of acute dysentery, under all its varieties of fixation, there can be little question, is suppressed perspiration or a sudden chill applied to the surface, acting in conjunction with the predisposing cause of an atmosphere varying rapidly from heat to cold and from moist to dry; but by what means this exciting cause operates upon the larger intestines, rather than upon any other cavity, or produces the symptoms of dysentery, rather than those of diarrhœa, cholera, or colic, we seem to be incapable of determining. We perceive, however, in the events of every day, that sudden chills on the surface are possessed of a revellent power, and throw the action which is lost on the skin on various internal organs, and especially on cavities of mucous membranes, which, in consequence of this excitement, become inflamed, and pour forth an

Its action illustrated

additional secretion. Such is especially the case in rheumatism and catarrh, both which terms are derived from the same Greek root, and import defluxion. And, from this common character, the three diseases have by some pathologists been conceived to be so much alike, that dysentery has been regarded as an intestinal rheumatism by Cœlius Aurelianus, Akenside, Stoll, and Richter; and is actually set down, by Dr. Parr, as a species of catarrh, in his nosological classification.

GEN. X. SPEC. I. Dysenteria acuta. by that of rheumatism and catarrh.

We also see why dysentery, like catarrh, may be either sporadic or epidemic; as also why, in each case, it may be either slight, and pass off without any serious evil, in a few days, or accompanied with great inflammatory action and continued fever: thus giving rise to the two following varieties:

| | |
|---|---|
| α Simplex.<br>Simple acute dysentery. | Feces often discharged without considerable pain; of a natural quality and affording ease: abdominal tenderness unheeded. |
| β Pyrectica.<br>Pyrectic dysentery.<br>Dysenteric fever. | Stools frequent: in every way diversified both in colour and consistency: severe pain in the abdomen: fever considerable, mostly a synochus. |

These are the two varieties under which acute dysentery is described by Sydenham, who indeed limits himself almost entirely to these forms of the disease, since, though he notices the second species or chronic dysentery, he merely glances at it in a kind of postscript to his chapter. Yet his description of both is so accurate, and his general mode of treatment so judicious, that they have received the sanction of the most approved pathologists from his own day to the present.

Thus arranged by Sydenham.

As the local inflammatory action is more usually traced in the colon than elsewhere, Stoll*, and various other

Colonitis of Ballingall.

* Rat. Med. Part III. p. 294, 336.

Gen. VII. Spec. IX. Empresma carditis.

cardium *. There has been no pain; but aneurismal symptoms have occurred, which the post-obituary examination has not explained the cause of. Such is the influence of disease of the pericardium over the organ which it encloses, that it has occasioned appearances of complaints which had no existence; and the symptoms of chronic inflammation of the membrane may assume a form resembling that of organic disease of the heart. On other occasions, palpitations are the main effects, and the other local symptoms afford no information. In Andral's twelfth case, there was pain at the bottom of the sternum, and in the region of the heart; obscurity in the pulsations of this organ; but strength and regularity in the pulse: dissection showed a stratum of coagulating lymph in the pericardium; and what is most curious to remark is, that, several times in the course of the disease, the dyspnœa and general anxiety subsided with the pain †.

In the judgment of the editor, no modern pathologist has investigated the characteristic symptoms of pericarditis with so much discrimination and success as M. Louis. The cases which he witnessed and verified by dissection show, that the distinguishing symptoms, most to be depended upon, are, *a more or less acute pain in the præcordia, taking place suddenly; accompanied with oppression and palpitations in a greater or less degree; irregularity, or intermissions of the pulse, sooner or later followed by an obscure dull sound in the region of the heart on percussion, while the rest of the chest yields a clear resonation.* When all these symptoms, says M. Louis, are combined in a person previously well, the existence of pericarditis may be inferred. If the pain were absent, and the other symptoms occurred, the diagnosis, he thinks, would be hardly less clear; for the only doubt would be between pericarditis and hydrops pericardii, and this last disease is formed with less quickness, and without all the series of symptoms above detailed. In a chronic case, more difficulty would be experienced.

Symptoms most to be relied on.

The anasarca and coldness of the lower extremities, in

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* Ibid. Case following that last cited. See Andral, tom. iii. Obs. 9.

† Bibes de l'Anatomie Pathologique considérée dans ses vrais Rapports Intimes des Maladies, tom. i. p. 88. Paris, 1826.

ventured a scoff at the pathology of Sydenham, "who," says he, "it is our firm belief never examined a dead body after he left his academical studies;—at least he has given us no indication of pathological knowledge in any of his works*."

Gen. X. Spec. I. Dysenteria acuta.

I value Dr. Johnson's friendship, and have an equal value for his talents, but I cannot concur with him in thus tearing from the temples of an illustrious countryman the wreaths of honour he has so deservedly earned, and which have been bestowed on him by our best foreign as well as domestic judges, from Boerhaave and Sauvages, in the middle of the last century, to the younger Frank in the present day. His language indeed is tinctured with the prevailing errors of the humoral hypothesis, which at that period it was impossible altogether to avoid, and which is again rising into notice in some quarters; but sifted of this, his pathological doctrines are those of the present day, to which in the main they have given rise; and better stand the test of dissection, than those of Dr. Johnson himself. "His observations," says Dr. Bostock, "will be commonly found to be correct, although his hypotheses are too often fallacious†." These "observations" teach us in few words, that dysentery is an inflammatory affection of some part of the larger intestines, which, in its idiopathic and milder state, subsides without serious evil in a few days; but which, occurring in the autumn, is apt to associate itself with whatever febrile epidemy is then prevalent, to become a far more important and complicated malady, and to ravage over a much larger field of organization; the fever aggravating the dysentery and the dysentery the fever; while, not unfrequently, a metastasis ensues and the fever is thrown upon the intestinal canal, and expends its violence topically: during which vehemence of action a peccant material (the contagious principle of Dr. Cullen), is elaborated in the constitution and thrown out on the surface. To oppose all which he lays down a therapeutic plan, which evinces an equal degree of judgment; and consists in bleeding, purging, diaphoresis, and opium; in other words, in

Sydenham illustrated.

* Medico-Chirurg. Rev. Mar. 1823, p. 330.

† Elementary System of Physiology, vol. i. p. 448, 8vo. 1824.

GEN. X. SPEC. I. Dysenteria acuta.

taking off congestion, and inflammatory action, in allaying irritation, and restoring to the circulatory system its proper balance. It may perhaps be said by some modern writers, that he did not always carry these principles far enough. Possibly not in every instance; but this must altogether depend upon the severity of the disease. And we have a proof, in his own success, that he carried them far enough in general; while his great merit consists in the establishment of such principles; and in squaring a correct line of practice to a correct pathology. It may also be objected, that calomel does not appear to have entered into his list of deobstruents. That he did not use it among other *cathartics*, shows, evidently, that his cathartic catalogue might have been improved; but to have employed it as a *sialogogue*, and to have *depended* upon curing the disease, *almost exclusively*, as his loudest opposers have endeavoured to do, by ptyalism—however valuable such a process may be in a few instances—would not I fear have added to his reputation, or increased the number of his followers.

Shown to be in coincidence with the best opinions and practice of the present day.

Had the animadversion, indeed, which I have thus felt it my duty to notice been delayed but a few months, it is most probable, that it would not have been advanced at all. For whilst the learned writer who has made it, had already to struggle with perhaps a majority of the most judicious tropical writers, in denying the existence of contagion at all times, and regarding the very opinion as absurd*; he would have found in the admirable treatises on dysentery which have since been furnished us from Ireland, not only that this opinion, as already observed, seems to have a firm foundation under particular circumstances; but that his favourite doctrine, that the liver is the primary seat of the disease, is completely unhinged; as also that his favourite plan of treatment has as little succeeded here, as it did in India under Dr. Ballingall, or, as Dr. Frank informs us, it did in his hands in Egypt during the occupation of that country by the French army.

α D. acuta simplex.

The diagnostics of the first variety, or SIMPLE ACUTE DYSENTERY, unaccompanied with the prevailing fever of the season, are thus accurately laid down by Sydenham:

* Influence of Tropical Climates, Edit. III. p. 223.

"But frequently there is no appearance of fever; for the host of gripings take the lead and the dejections follow. The gripings are always severe, and a sort of painful descent of the bowels accompanies every evacuation. The discharges are chiefly mucus, but an excrementitious stool sometimes intervenes without considerable pain. The mucous stools are generally streaked with blood; but, in some cases, there is no such appearance through the whole course of the disease. Nevertheless, if the stools be frequent, mucous, and accompanied with gripings, the disease may as justly be called a dysentery as if blood were intermixed with them."

GEN. X. SPEC. I. a D. acuta simplex.

Diagnostics of Sydenham.

These constitute the ordinary symptoms of the simple variety. And to the same effect Dr. Cheyne, "when dysentery was unconnected with continued fever, which apparently was often the case, there was nothing peculiar in its origin. The patients generally assigned cold, damp, fatigue, hardships, indigestible food, as the causes of their disease, which began with confinement of the bowels, chills, pyrexia, tormina, unsatisfactory stools and tenesmus*." It is correctly observed by Dr. Chisholm, that, "when after the straining has continued for a few days, the stools are intermixed with blood, the blood never thoroughly combines with the slime or mucus so as to produce a uniform colour†," but as Sydenham observes, "appears distinctly or in streaks."

How described by Cheyne.

It is remarked by several of the practitioners in India, and especially by Mr. Bampfield, that the dejections are more frequent during the night and especially towards morning, than at any other period of the twenty-four hours: and that the attacks and relapses of the disease are more common at new and full moon, than at any other period of the lunar revolution: and the influence of the heavenly bodies is referred to as the cause of these peculiarities‡. The remark does not seem to be sufficiently established.

Bampfield.

Said to be affected by solar or lunar influence.

In its most favourable course, the symptoms gradually subside in a week or ten days, and sometimes even sooner, the skin becoming soft and moist, and the circulating fluid

Progress of the disease.

* Dublin Hospital Reports, vol. iii. p. 18.

† Climate and Diseases of Tropical Countries, p. 54.

‡ On Tropical Dysentery, 8vo. 352, 1819.

GEN. X. SPEC. I.

recovering the natural freedom of its current. If the symptoms augment, all the local mischief of ulceration and gangrene follow, which we shall have to describe presently, or the disease will become CHRONIC.

β D. acuta pyrectica.

In the SECOND VARIETY OF DYSENTERIC FEVER, as it is called by many writers, all the preceding symptoms are highly aggravated, and others are superinduced by the action of the fever itself.

Dysenteric fever.

When it chiefly occurs.

The preceding variety may occur at any season of the year, though, for reasons already stated, the disease under every form, is most frequently to be met with in the estival and autumnal months: it is very rarely, however, that the pyrectic variety is to be found in any other than these two seasons; nor even in these, unless there be some endemic or epidemic fever prevailing, with which dysentery can combine.

Apt to combine with any prevalent fever.

Of its readiness to do this, and even to convert almost all the other diseases of the season into its own form, so forcibly pointed out by Sydenham, the late ravages in Ireland have furnished us with the most undeniable proofs.

Illustrated.

"The bilious fever of the autumn," says Dr. Cheyne, "continued till near the termination of winter, consequently it existed as long as the dysentery was prevalent in the hospitals and the House of Industry, or the symptoms were often exchanged for those of dysentery, the irritation from the mucous membrane of the stomach and small intestines probably extending to the large*." And again, "dysentery was sometimes converted into fever, while, vice versâ, fever was converted into dysentery: in short, these forms of disease were convertible the one into the other; so that the opinion of Sydenham, that dysentery is a *febris introversa* or *turned in upon the intestines*, received support from our observations. And it is not unreasonable to suppose, that as these patients in my wards, in common with most of the poor in the city, had been exposed to the contagion of fever; this CONTAGION, according to the condition of the system at the time of its application, or some other modifying circumstance, may have produced at one time fever, at another, dysentery†."

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* Dublin Hospital Reports, vol. iii. p. 17. † Id. p. 19.

Gen. X. Spec. I. β D. acuta pyrectica.

As also with other diseases of the season.

And so of other diseases as well as the prevailing fever of the season. "In early autumn, cases of cholera degenerated into dysentery, and in the spring following, symptoms of dysentery accompanied the measles, then epidemical in many parts of Ireland*."

Doctrine that dysentery is a symptom of some other complaint examined. Jackson.

It is from the peculiar tendency which dysentery has to unite with other diseases, and especially fevers, or to convert them into its own nature, that many pathologists of considerable name have regarded it as nothing more than fever with a peculiar "local mode of action," to adopt the language of Dr. Jackson. And they hence endeavour to show that, when dependent upon a cause of endemic fever, it is often intermittent; when dependent upon a cause of contagious fever, it is contagious†; and when dependent upon a cause of typhous fever, it is malignant or putrid; —in the language of Dr. Balfour, as applied to the dysentery of India, a "*putrid, intestinal, remitting fever*‡."

Putrid intestinal remitting fever of Balfour.

Often a disease of atony.

Most of the French writers of the present day describe dysentery as essentially an atonic or adynamic disease, and hence peculiarly apt to fall into this last form; and Dr. L. Frank represents this as the form it assumed with little deviation among the French army in Egypt, and believes it to be the ordinary form of hot climates§. And we can hence see, where there is much fibrous debility with but little fever, and especially where this is produced by poverty of diet, that it may occasionally connect itself with that kind of scorbutic affection which appeared some time ago among the convicts of the Milbank Penitentiary, and lay a foundation for such a form of the disease as was long ago denominated *dysenteria scorbutica* by Cirigli and Brambilla‖, and has been distinguished by the same name in our own day, by Mr. Bampfield ¶.

And hence united with scurvy of late in Milbank Penitentiary.

The dysenteria scorbutica of Cirigli and others.

Pyrectic variety described.

In the pyrectic variety, therefore, the fever is found to vary according to the diathesis or surrounding circumstances. The functions of the liver and skin are disordered from the commencement, and continue so till the termination. In the dysentery at Dublin, in the autumn

As it appeared at Dublin.

* Dublin Hospital Reports, vol. iii. p. 16.

† Jackson, Hist. and Cure of Fever, Endemic and Contagious, Part I. ch. xiii. p. 324.

‡ On Sol-lunar Influence, p. 17. § Consult. LIX. T. H. p. 135.

‖ Phlegm. tom. ii. p. 337.

¶ Practical Treatise on Tropical Dysentery, &c. 8vo. 1819.

GEN. X. SPEC. I. β D. acuta pyrectica.

of 1818, the skin was obstinately dry, hot, and pungent; and, "judging," says Dr. Cheyne, "by the appearance of the stools, the biliary secretion was often suspended for many days*." Scybala were here never found in the discharges, nor often in the intestines; and they by no means appear so frequent as have been represented by many writers; insomuch indeed, that it has of late been doubted by some authorities, whether they are ever to be traced at any time, or in any country. Dr. Johnson has freely imbibed this doubt†: Dr. Ballingall tells us that "it is *comparatively* a rare occurrence in India‡: while Dr. Chisholm speaks of them, on the contrary, as an ordinary symptom, and particularly adverts to the case of one patient under his care, who, "on the tenth day of the disease, after a paroxysm of excruciating torture, attended by cold sweats and deliquium, spontaneously discharged at three evacuations a quantity of scybala sufficient to fill a common-sized chamber-pot§." There is hence no reason to question their occasional formation, notwithstanding they are rarely to be traced on many occasions in the dysentery of any climate: their production indeed is easily accounted for from the spasmodic constrictions which so often run through a very considerable range of the intestines; and there is hence, primâ facie, more reason for anticipating than for not expecting them. Mr. Pack, who had formerly witnessed them in the Mediterranean, was surprised at not meeting with the same appearance at Kilkenny, in the epidemy of 1818, and could not avoid adverting to the dissimilarity of the disease in this respect in these distinct quarters‖.

Scybala whether discharged or not.

Their occasional formation accounted for.

Dejections complicated of all materials.

The patient, on going to stool, whatever be the discharge that ensues, has always a feeling of something remaining in the bowels which ought to be dejected; while the dejections themselves, according to the extent and violence of the inflammatory action and its effects, evince every

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* Cheyne, ut suprà, p. 22.

† Johnson, Influence of Tropical Climates, &c. p. 223. et passim.

‡ Practical Observations on Fever, Dysentery, and Liver Complaints, &c. 2d edit. Edin. 1823.

§ Climate and Diseases of Tropical Countries, &c. p 56. See also Cleghorn on the Diseases of Minorca, p. 252.

‖ Dublin Reports, &c. ut suprà, p. 20.

combination of materials: being, in consistency, watery, like beef-washings, slimy, mucous, purulent, bloody; in hue, drab-coloured, like flummery, bright green like conferva, and, after opium and calomel, deep green; sometimes pitchy*, and extremely fetid; and sometimes loaded with shreds of detached membranes; while occasionally a feculent motion is thrown down, of a natural colour, and nearly of a natural spissitude. Meanwhile, to adopt the description of Sydenham, the strength is much exhausted, the animal spirits dejected; there are all the signs of an ill-conditioned fever; intolerable sickness and excruciating pains, and a deadly coldness of the extremities. Insomuch that the disease, in many instances, and especially when unskilfully treated, endangers the patient's life much earlier, than in most other acute diseases. But if the patient should escape death in this way, still numerous symptoms of a different kind succeed. Sometimes in the progress of the disease, instead of the membranous shreds which are usually mixed with the stools at the commencement, pure blood, unmixed with mucus, is profusely discharged at every evacuation, which of itself threatens death, as manifesting an erosion of some of the larger vessels of the intestines. Sometimes a fatal gangrene seizes the intestines. Towards the close of the disease, aphthæ frequently affect the interior of the mouth, and generally foreshow imminent death.

GEN. X. SPEC. I. β D. acuta pyrectica.

Progress of the disease.

Sometimes pure blood discharged.

Sometimes gangrene.

Aphthæ.

The rapidity with which acute dysentery, when connected with fever, rushes on to destruction, is particularly noticed by Dr. Cheyne, who ascribes the fatal issue in this case to the violence of the fever itself, rather than to the proper dysenteric symptoms: though he adds, that sometimes sudden death ensued from an escape of the contents of the intestines into the cavity of the peritoneum, in consequence of ulceration†.

Fatal issue often rapid.

The afflux of hot acrid matter alluded to by Sydenham is not unfrequently derived from the liver, and indicates a very morbid condition of this organ; and to the same effect Dr. Johnson:—"We sometimes see a partial ill-conditioned sweat on the surface, which is productive of no benefit: while from the liver an occasional gush of vitiated bile, like so much boiling lead, throws the

Afflux of hot acrid matter.

* O'Brien on Acute and Chronic Dysentery, p. 58. † Vide suprà, p. 20.

GEN. X. SPEC. I. β D. acuta pyrectica.

irritable intestines into painful contortions, and then the tormina and tenesmus are intolerable*." There is occasionally, at this time, a formation of black vomit, the stomach discharging frequently a dark fluid, with a precipitate like coffee grounds†.

Sometimes black vomit.

Whether signs indicative of an affection of the liver.

Dr. Chisholm observes, that the principal signs of the disease having extended to the liver are, a "pain at the pit of the stomach, and a head-ache, a considerable anxiety at the præcordia, and a sensation as of a continued pressure in the right hypochondrium, with frequent stools, composed of a fluid like the washings of raw meat‡." But he admits, as we have already noticed, that these are not idiopathic, and consequently are not to be depended upon for this purpose. They prove, however, that the disease has made an extensive inroad upon the constitution. Not unfrequently the lungs themselves are affected, not merely in their function, but in their structure: for the respiration, observes Dr. Cheyne, was sometimes suddenly suppressed in the advanced stages; there was pain in the chest, a teasing dry cough, showing a translation of the disease to the lungs; an exudation of puriform mucus in the cavity of the bronchia being detected on dissection§.

Sometimes the lungs affected.

Fatal prognostics.

"A harsh, dry, opake, dirty-looking skin; a florid, clear, varnished tongue; vigilance; a hollow eye, and pallid, wasted, faded cheek; pains in the knees; cramp in the legs; fits of dyspnœa; tendency to œdema and ascites—belonged to the more advanced stage, but not to the last; which was characterized by extreme emaciation, supine posture, involuntary stools, a thin reddish secretion, flowing without check; sordes on the teeth; hiccough; tendency to delirium; difficulty of swallowing; thread-like pulse‖."

Mortality often dreadful.

The mortality is often dreadful. At Clonmel, in 1818, where however it was far less severe than in many other parts of Ireland, Mr. Dillon calculated the deaths at one in ten; at Cork, during the same year, Dr. Barry estimated it at one in three at the least. "I never," says he, "witnessed so fatal a disease." And to the same effect,

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* Influence of Tropical Climates, ut suprà, p. 194.
† Dublin Hospital Reports, vol. iii. p. 32.
‡ Ubi suprà, p. 59. § Suprà, p. 25. ‖ Suprà, p. 23.

in general terms, Dr. Cheyne, while practising at Dublin: "I had often witnessed obstinate cases of dysentery, but I had not formed an adequate conception of the horrors of that disease, until I saw the patients who were congregated in the wards of Whitworth hospital." [Sir James M'Grigor, in his Account of the Diseases of the Army in the Peninsula, mentions, that, in three years, the loss from the ravages of dysentery, was 4717; and Dr. O'Beirne * calculates that the number of cases was 40,000. According to Desgenettes, dysentery made more havoc among the French troops in Egypt, than the plague; for while, in a given period, 1689 were carried off by the plague, 2468 perished from dysentery.]

GEN. X. SPEC. I. β D. acuta Pyrectica.

POST-OBIT EXAMINATIONS were made in the dissecting room of the Whitworth hospital upon a very extensive scale, and gave evident proof, first, that the primary and CHIEF SEAT OF THE DISEASE WAS THE INTESTINES; though the liver often participated in the general lesion; and, secondly, that the intestinal canal was very variously diseased, according to the length or severity of the attack, or the peculiarity of the patient's constitution.

Post-obit examinations. Chief seat of disease in the intestines.

In some cases, the canal was prodigiously distended; in others, the coats were greatly injured, but without any thickening; in others again, they were considerably thickened, as well as otherwise diseased.

Affected in various ways.

Where distention prevailed, the small intestines were, in a few instances, found to be not less than seven, and the large not less than nine, inches in circumference.

Where the intestinal coats were *without incrassation*, the inflammation of the mucous membrane was sometimes still very extensive, and reached from the stomach to the rectum; being, however, more obvious as the larger intestines were approached; though occasionally this last intestine was still pretty sound for three or four inches above the sphincter. The vascularity of the mucous membrane was sometimes increased without abrasion, or ulceration; sometimes the same part was covered with coagulable lymph;

* See Trans. of King's and Queen's Coll. of Physicians, vol. iv. p. 407. Dublin, 1824.

Gen. X. Spec. I. β D. acuta pyrectica.

sometimes simply abraded of its epidermal coat; sometimes partly ulcerated, and irregularly exposing the muscular coat; the intervening portions being of a natural appearance.

Disease long and severe when the coats are thickened.

Where the intestinal coats were *thickened*, the mischief seems to have been generally more severe; the internal surfaces were often rugous as well as ulcerated, exposing the muscular fibres more extensively, which often hung in shreds as if sphacelated. The process of thickening moreover, belonged to the more protracted cases, and often measured the duration of the disease *.

This effect chiefly in the colon.

This incrassation is traced chiefly in the colon, which Dr. Chisholm has found sometimes a quarter of an inch thick, and full of minute abscesses, and small steatomatous excrescences †. These last appearances are particularly noticed by Dr. Cheyne, but described differently: "they are not," says he, "small ulcers, but minute pinholes formed out of the enlarged ducts of mucous glands; they were found very numerously, but especially in the rectum, and lower part of the colon." By Dr. Baillie they are described as excrescences resembling warts ‡.

Liver commonly sound but often otherwise.

"The LIVER," says Cheyne, "IN A MAJORITY OF CASES WAS SOUND, but often otherwise. In *two* cases, there were abscesses; and in many, great sanguineous congestion §." To a like effect Dr. O'Brien, writing from the same capital at a later period: "Generally," says he, "the liver was unaffected; though the gall-bladder was always distended with deep-brown, or dark-yellow bile ‖." Both these appearances were particularly observed by Dr. Chisholm in the West Indies, thus again harmonizing the nature of the disease in climates of different temperatures. "Where the colon was thus diseased, it was prodigiously distended with air. All the rest of the intestinal canal was healthy, the liver was equally so; but the gall-bladder was of a most uncommon size, and full of yellow bile ¶."

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* Medical Report, &c. pp. 28. 34.
† Climate and Diseases of Tropical Countries, p. 56.
‡ Morb. Anat. fascic. IV. Pl. III. p. 73.
§ Medical Reports, &c. p. 36.
‖ Observ. on the Acute and Chronic Dysentery of Ireland, Dub. 1822.
¶ Climate and Diseases, &c. p. 57.

Gen. X. Spec. I. Dysenteria acuta.

The same undeviating show of mischief in the intestinal canal, with only an occasional appearance of morbid structure in the liver occurred to Dr. Ballingall in India, and to Dr. L. Frank in Egypt: so that the real source of the disease can be no longer a matter of doubt. "The dissection of every subject," says the former, "who died of dysentery in the regimental hospital of Penang (with one solitary exception), proved the disease to consist entirely in an inflammatory affection of the large intestines, without a trace of disease in the structure of the liver*."

Summary of twelve dissections.

[In a late essay† on the present subject, Dr. O'Brien has recorded the dissections of twelve dysenteric patients. The summary is as follows: liver diseased in six; spleen in three; small intestine (chiefly ileum) inflamed, or ulcerated on its mucous surface in eight; great intestine diseased in twelve; gangrenous in one; much contracted in two; ulcerated and inflamed in all; colon and rectum parts most diseased.]

Medical treatment.

The MEDICAL TREATMENT of dysentery has given rise to much warfare of opinion. Not however in slight cases of the simple acute disease; for such usually give way in a short time to the ordinary evacuants and sedatives. "In cases," says Dr. Cheyne, "not attended with much fever or pain, and in the first few days of disease, a purgative in the morning, ten grains of Dover's powder in the afternoon, and again at bed-time, with low diet, restored many‡."

Practice of Cheyne.

Of Sydenham.

Sydenham generally commenced with bleeding, gave an opiate at night, and a pretty active purgative in the morning: the purgative consisting of a drachm and a half of rhubarb, two drachms of senna, with half an ounce of tamarinds infused in a sufficient quantity of water, with manna and syrup of roses. The purgative was repeated twice every other day, and in every instance followed up with an anodyne of sixteen or eighteen drops of his own potent laudanum, to take off whatever additional excitement the purgative might produce. The same anodyne was

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* Practical Obs. on Fever, Dysentery, and Liver Complaints, &c. 2d. ed. 8vo. Edin. 1823.

† See Trans. of King's and Queen's College of Physicians, vol. v. p. 249. Dublin, 1828.

‡ Medical Report, &c. p. 42.

GEN. X. SPEC. I. Dysenteria acuta.

constantly given with a warm diaphoretic, every night and morning, even on those days when the aperient was not employed.

Medical treatment.

Where this was insufficient, the sedative was repeated every eight hours to the amount of twenty-five drops at a dose, and a perspiration was still further attempted to be promoted and maintained by drinking freely of whey or the white decoction, and the use of warm emollient injections; the perspiration being continued for at least twenty-four hours at a stage, the only beverage allowed in the meanwhile being tepid milk.

The tormina and bloody stools usually gave way after the third or fourth injection. But where the morbid secretion ran into a chronic character, he varied the form and intention of the injection; and, with a view of introducing a new and less unhealthy action, compounded it of half an ounce of Venice turpentine dissolved in a pint of cow's milk, which was thrown up daily: thus anticipating, in a very considerable degree, the modern practice of obtaining the same effect by the balsam of copaiba, which is only a terebinthinate of another kind.

His principles not easy to be improved upon.

The *principles* of this practice it is not easy to improve upon; though they have since been modified and often extended with considerable advantage.

How far bleeding advisable.

As a general rule, the lancet was had recourse to with too much timidity; though its present indiscriminate and lavish employment forms an extreme that ought equally to be avoided. Where the fever is considerable, the pulse hard and full, and particularly where there is much general pain and tension over the belly, indicating an inflammatory diathesis, blood should be drawn copiously and with all possible speed, and repeated as long as the same symptoms may require; for here we have no time to lose; the inflammation may run rapidly into gangrene, and the patient sink from mortification or loss of blood in a day or two; perhaps in a few hours. There is nevertheless no disease that requires the exercise of a sounder judgment upon this point than dysentery; as the fever, if not typhous from the first, has a general tendency to pass into this type. [The statement of Dr. Renton, who has given a description of dysentery, as it appears in Madeira, corroborates the necessity of great caution; for, he says, that he was once

in the habit of using the lancet freely and repeatedly, and of trusting to it and other antiphlogistic means; but, *every case*, so treated, terminated fatally*.] GEN. X. SPEC. I. Dysenteria acuta.

In his cathartic plan, Sydenham would have been considerably aided by the use of calomel; of all the purgative deobstruents the most valuable; and the more so, as exercising its evacuating power over all the secernents of the body. It has of late, indeed, been most extensively employed in quite a different way, and for a very different object; that I mean of curing by a specific action upon the immediate seat of inflammation; being persevered in for this purpose in doses of from five or ten to twenty or twenty-five grains two or three times a day; assisted, where there is much torpor of the absorbents, by mercurial friction, and continued till ptyalism is produced, which, as in the case of yellow fever, is the alleged test, that the constitution is sufficiently loaded with it, and that the disease is about to give way. How far calomel; and mercurial friction so as to produce ptyalism.

It is impossible to contemplate the conflicting opinions, which are given us respecting this mode of treatment by the monographic writers on tropical diseases, without astonishment: and the only mode of reconciling them is, to suppose that the constitution is very differently affected by the use of mercury, under different circumstances; and that while in some epidemics and sporadic cases it produces all that benefit which à priori we should expect generally, in others it entirely fails, or even proves mischievous. Dr. Jackson, Dr. Ballingall, and Mr. Bampfield feel justified in employing calomel merely as a purgative; while the second, though he regards it as of the highest importance in chronic dysentery, found even ptyalism itself unsuccessful in the acute form. Dr. Johnson esteems it of high importance as a purgative, but of the utmost moment as a sialogogue. He unites it occasionally with bleeding, with anodynes, with diaphoretics, or with all; but each of these is subsidiary to its powers, and may often be dispensed with†. Mr. Annesley unites it in the same manner, but takes every method in his power to prevent it from becoming a sialogogue. In any of the diseases Great conflict of opinion on this subject.

* Edin. Med. Chir. Trans. vol. ii. p. 381.

† Influence of Tropical Diseases, &c. p. 202.

GEN. X. SPEC. I. Dysenteria acuta.

Medical treatment.

for which he prescribes it, as fevers, dysentery, and liver-complaints, he gives it in scruple doses in each, "I never wished," says he, "to see the mouth in the least degree affected. Whenever this happened, I considered the salutary effects of calomel interrupted, because its use must be then discontinued; and it was my object to act upon the secretions of the intestines, to diminish muscular action in the intestinal canal, and not in the most remote degree to act upon the salivary glands*. Mr. Cunningham, late surgeon to the Sceptre, in the East Indies, boldly employs it alone, and regards every thing else as impeding its course. He does not even stand in need of alvine aperients of any kind, and prefers scruple doses to smaller proportions, because it does not in this form so readily excite the alvine discharge, so as to be carried out of the system by stool: and administered in this way, he fearlessly asserts, and the tables of his practice seem to justify his assertion, that "it is an almost certain remedy for dysentery, in hot climates at least." [Dr. Renton, of Madeira, after having given a trial to almost all the various modes, from copious bloodletting down to the oil of turpentine, feels himself justified in stating, after some years' experience, that, in the treatment of the dysentery of that island, "mercury, given boldly and perseveringly, until the mouth becomes decidedly affected, is the remedy chiefly entitled to confidence†." His plan is to give calomel every three or four hours, until the gums become sore.] And, finally, for it is not worth while to pursue the discrepancy further, Dr. L. Frank assures us, that, in his practice, the large doses of calomel, given so generally by the English surgeons in India, proved dangerous in the French army in Egypt; and that the plan, most successful in his hands, was that laid down by Sydenham, which consisted, says he, in removing irritation by gentle aperients, the use of emollient injections, mucilaginous and diluent drinks, diaphoretics, and laudanum.

Laudanum.

Sydenham employed laudanum as a cordial and diaphoretic, as well as a sedative; so as to take off that fear-

* Practical Observations on the Effects of Calomel on the Mucous Surface, &c. Lond. 1825. 8vo.

† Renton, in Edin. Med. Chir. Trans. vol. ii. p. 377.

ful depression of the animal spirits, by which dysentery is so peculiarly characterized, and to give a breathing moisture, and consequently a refreshing coolness to the parched and burning skin, as well as to allay local irritation; his chief auxiliaries for the last purpose being diluents, tepid injections, and the warmth of the bed. Modern practice has greatly improved upon this plan, by combining some relaxant with the opium; and, in many instances, by premising an emetic, which, independently of its often exciting a perspiration, which nothing else can accomplish, has the additional benefit of emulging the meseraic or mesenteric vessels by the act of vomition. The antimonial preparations form the best emetics for this purpose, whether the glass of antimony, at one time so powerfully recommended by Sir George Pringle *, tartarized antimony, or Dr. James's powder. Sir George Baker, Dr. Adair, and Dr. Saunders, concurred in strongly recommending the emetic tartar as a diaphoretic or relaxant; the first alone, the second with calomel, and the third with opium; all which, nevertheless, have, in our own day, often yielded to Dover's powder, which is certainly entitled to a very high degree of praise. Much, however, of the benefit to be derived from Dover's powder, as a sudorific, depends upon its proper administration, and the care taken to promote its influence by a proper adjustment of clothing. Dr. Cullen advises that the patient should, from the first, be wrapt in a flannel shirt and laid between the blankets alone, by a removal of the linen sheets, so that he may be surrounded by nothing but a woollen covering. Mr. Dewar's recommendation † of a broad flannel swathe or cumberband bound round the abdomen, is, however, better entitled to practice, as it affords support as well as warmth: Sir James M'Grigor found it very useful ‡.

GEN. X. SPEC. I. Dysenteria acuta.

Medical treatment.

Relaxants with opium.

Emetics.

Best mode of administering Dover's powder.

Flannel swathe.

Dr. Darwin amuses us with a singular mode of producing the same result, and one which, if continued long enough, might probably prove as powerful a revellent as any of those already noticed, but which we should not al-

Singular sudorific plan mentioned by Darwin.

* Edin. Med. Essays, vol. v. Art. xv.

† Observations on Diarrhœa and Dysentery, as those Diseases appeared in the British Army in Egypt in 1807.

‡ Medico-Chir. Trans. vi. 433.

GEN. VII. SPEC. IX. Empresma carditis.

and, as Laennec remarks, it is consequently very imperfectly known, both in a practical and pathological view. Our author enumerates merely some of the symptoms of pneumonitis, or pleurisy, joined with palpitation, irregularity of pulse, and tendency to fainting. Yet, these characters can hardly be received as pathognomonic; because, as Senac observes, they are extremely uncertain; and, with respect to palpitation, although its presence may lead us to suspect that the heart is affected, yet it is probably only an hypothetical opinion, since, in that inflammation which arises from wounds of the heart, palpitation does not occur*. What Corvisart describes as inflammation of the heart, seems to Laennec to have been in reality pericarditis, conjoined with a paleness, and sometimes also with softness of the substance of the heart†. Indeed, as Dr. J. Forbes remarks, carditis, properly so called, has been almost universally confounded with pericarditis. He has never seen an unequivocal case of inflammation of the muscular substance of the heart. Yet, he has no doubt of its occasional existence, from the statements of Dr. Baillie, and from ulcers and abscesses having been met with in that substance.]

Walls of the heart sometimes thickened.

There seems sometimes to be an increase in the action of the vessels of the heart, which, though short of inflammation, is sufficient to give thickness to its walls, and considerable magnitude to its general substance. And hence a frequent origin of enlargement of the heart. M. Bayle has published an interesting case, which appears to belong to this kind of morbid structure. The patient was a young man of delicate constitution, and limited intellect. He was attacked in 1819 with mental derangement; and, in a few months afterwards, seemed to labour under a general oppression in every organ, under which he died in a few days. The membranes of the brain were infiltrated and thickened: the heart was twice and a half its natural size: the aorta and pulmonary artery, as well as various other vessels, gave evident proof of a direct inflammatory action‡.

Exemplified.

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* Senac, Traité du Cœur, tom. ii. ch. vii.

† Laennec on Diseases of the Chest, p. 621.

‡ Observations d'Arterite. Bibliothéque Médicale. Sept. 1821.

though the pleasantest to the taste, is more apt to irritate the bowels, than the nitric. But the best mode of giving the latter, is, by combining it with muriatic acid in the proportion of two-thirds of the former to one of the latter, imitating hereby the chrysulea of Van Helmont, or the aqua regia of later chemists, the nitro-muriatic acid of the present day, in doses of two drops of the nitric, one of the muriatic, and ten minims of laudanum, intermixed with infusion of roses or that of the more powerful astringents logwood, catechu, and gum kino. I have employed this medicine with peculiar advantage, not only in dysenteric, but in many other loosenesses, and hemorrhages of the bowels, increasing the proportion of the acid or the laudanum as the urgency of the symptoms requires *.

Medical treatment.

When, however, the thirst is considerable, and acidulous drinks are called for, we may for this purpose use the sulphuric acid as the most grateful; though, in this case, the citric acid will usually be preferred, and the patient may be allowed to exercise his choice. Yet the one or the other of the above compounds should be continued, without any alteration in consequence of such a beverage.

Acidulous drinks.

Since the second edition of this work, the medical world has been favoured with the opinion and practice of Dr. Baillie, in a printed but unpublished volume of his writings. And if there be individuals who object to the practice of Sydenham on account of its defective energy, they will have infinitely more reason to accuse this eminent physician of tameness. He recommends bleeding, indeed, as what is *frequently* of service, but local alone and by leeches; as cathartics, "mild purgative medicines, of which," says he, "I think castor oil upon the whole the best;" and opiates and astringents to be delayed till "natural fluid motions" have been obtained †. Never was man more suspicious of the powers of medicine, or more entitled to the character of an expectant physician, than this eminent pathologist.

Baillie's practice.

As the disease declines, there will often be found a very considerable degree of debility, and a chronic diarrhœa,

Diarrhœa from chronic debility,

* See likewise Th. Hope's Obs. on the powerful Effects of a Mixture of Nitrous Acid and Opium in curing Dysentery, Cholera, and Diarrhœa. Edin. Med. and Surgical Journ. No. 88. p. 35.

† Lectures and Observations on Medicine, 1825.

GEN. X. SPEC. I. Dysenteria acuta.

with occasional discharges of blood, from the excoriated state of many of the minute blood-vessels of the mucous membrane of the intestines, or perhaps from a simple relaxation of the mouths of the capillaries. And in this situation, and especially where the disease has assumed a highly malignant character, many of the bitters of the Materia Medica, as the cinchona, columbo, simarouba, or extract of chamomile; and, perhaps, the *nerium antidysenterium* of Linnéus, may be resorted to, in connexion with acids, with great advantage. They have indeed occasionally been given from the first; and, in a few very slight cases and very infirm constitutions, the practice may have succeeded; but as a general rule it is highly rash, and has rarely been tried without repentance.

to be opposed by bitters and acids.

Have been employed from the first; but injudiciously.

In conjunction with this process, the very great tenderness of the interior of the larger intestines, from erosion or abrasion, will often, for a long time, demand peculiar local attention; and demulcent or bland oleaginous injections, as the infusion or oil of linseed, or olive oil with a little wax and soap dissolved in it, together with a grain or two of opium if there should be much pain (the whole not to exceed three or four ounces in quantity), will often be found of great assistance.

Bland injections often requisite.

Opium alone in the form of a small pill or suppository, as recommended by many practitioners, will be generally found too harsh; and, where there is much tenesmus, it will be impossible to retain it. The only mode in which I have found it useful in this way is to rub it into an impalpable pulp with a little of the oil or butter of the cocoa-nut, and to mould it into small pastiles of a sufficient consistency to bear the touch.

Opiate pastiles.

In long protracted and chronic cases, lime-water drunk freely has occasionally also proved useful. The coat of the intestinal canal is here, however, sometimes very considerably thickened and indurated. And in such cases, the best remedy we can have recourse to is mercury.

Lime-water in chronic cases.

The liberal and experimental practice pursued at the Dublin and various other hospitals in Ireland during the late severe attacks of epidemic dysentery, and its general though often discrepant effects, may be appealed to in confirmation of the mode of treatment thus far laid down.

Recent treatment in the Dublin and other hospitals of Ireland.

Such was the fatal ravage of the disease that no one

plan, hitherto devised, offered more than a very unsatisfactory success;—and hence almost every plan was tried in its turn. GEN. X. SPEC. I. Dysenteria acuta.

From the treatment by mercury much was at first expected; and in many cases it seems to have been of use; but it "did not succeed," says Dr. Cheyne, "so well as I expected. Calomel tried in every proportion and distance of time often failed with me and my colleagues *." And he adds shortly afterwards, "Mercury could not be depended upon, and did not relieve in numerous instances where the mouth was affected; and sometimes seemed to increase the disease †." And even where the symptoms distinctly pointed out a morbid organization of the liver, the result of this treatment was unsatisfactory. "Mercurial frictions," says Dr. Cheyne, "were tried in all the forms over the region of the liver; but the advantages were not so extensively beneficial as I had reason to suppose, from finding that in every dissection the liver was in its structure more or less destroyed ‡." Mercury found not generally of advantage; sometimes mischievous, even where the liver was affected.

Venesection and opium seem to have been more beneficial. "The lancet," he further adds, "has repeatedly afforded great temporary relief where ulceration seemed to have taken place; and the relief proved permanent from blisters, mild aperients, and anodynes. Where the lancet was not allowable, leeches were also highly useful §." Free venesection we are told, in another place, often procured a large feculent stool, where even purgatives failed. In conjunction with a blister, it often removed even the alarming symptom of dyspnœa when timely applied ‖. Advantages of general and local bleeding. Blisters, aperients, and anodynes.

Dr. Cheyne's sheet-anchor seems to have been opium, and to this he shows as strong an attachment as Sydenham, who only preferred the liquid to the solid form of this medicine, as he expressly tells us, on account of its more easy sub-action. Dr. Cheyne, however, carried his practice here, as well as in bleeding, to a considerably larger range, at least in severe and alarming cases. "The mercurials," says he, "with opium sometimes seemed to answer: but in future I should chiefly depend upon opiates in doses of four or five grains, as this seemed chiefly to ar- Opium of chief benefit.

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* Report, &c. ut suprà, p. 41. † Id. p. 45.
‡ Id. p. 89. § Id. p. 47. ‖ Id. p. 26.

GEN. VII. SPEC. X. Empresma peritonitis.

δ Chronica. Chronic peritonitis.

Progress slow and insidious; pulse accelerated; little or no tension of the abdomen; sense of pricking, or slight tenderness in the belly; bowels generally costive, sometimes loose.

Noticed with singular brevity by Cullen:

It is singular that Dr. Cullen, after distinctly characterizing this species in his Nosology, and following it up into three sub-divisions, each of which, with him, forms a separate species, as the general disease does a genus, should take no other notice of the entire complaint in any form, except what is expressed in the following laconic remark: "Among the inflammations of the abdominal region, I have given a place in our Nosology to the peritonitis; comprehending under that title, not only the inflammations affecting the peritonæum lining the cavity of the abdomen, but also those affecting the extensions of this membrane in the omentum and mesentery. It is not, however, proposed to treat of them here, because it is very difficult to say by what symptoms they are always to be known; and further, because, when known, they do not require any remedies besides those of inflammation in general."

and more so than is expedient.

This remark is by far too sweeping. If the diseases referred to have no specific symptoms by which they can be known, they have no more claim to be admitted into a system of symptomatic nosology, than into a treatise of practice. Dr. Cullen is right in assigning them a place in the former; and he is, therefore, necessarily wrong in banishing them from the latter; and the more so, as the treatment ought, in some degree, to vary from that of enteritis, to which his general observation seems chiefly to refer.

α E. Peritonitis propria.

The TRUE PERITONITIS occurs, as we have already observed, as a symptom in PUERPERAL FEVER; and as we have treated of it at some length under that disease, it is the less necessary to be minute in our account at present.

How far related to puerperal fever.

Puerperal fever, indeed, is sometimes, though not quite correctly, made a variety of PERITONITIS; for it is a disease of a peculiar kind, produced by peculiar causes,

nerality of army surgeons, considers small doses of ipecacuan highly serviceable. Some little experience which he had in the present disorder, when he was on service in the Mediterranean, led him to think favourably of this medicine. Its utility, and that of small doses of hydrarg. cum creta, have been lately noticed by Dr. Bright*.] The treatment, where the disease ran into a chronic form, we shall notice presently.

[Dr. O'Beirne has related several cases in proof of the great efficacy of fomenting the abdomen with an infusion of tobacco, made by pouring two quarts of boiling water on two ounces of Virginian leaf-tobacco, and allowing it to stand for twenty minutes before use. Tobacco clysters, owing to the irritable state of the rectum, were not found to answer. Dr. O'Beirne usually lets the use of the fomentation be preceded by a mild purgative, like castor oil; and, indeed, he lays it down as a good general rule, that purgatives should be continued with the fomentation, until perfectly natural and feculent discharges be permanently established. The fomentations were sometimes repeated more than once in the day, and generally not discontinued, until some disturbance of the stomach and head had been experienced†.]

Tobacco fomentations.

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* See Bright's Reports of Medical Cases, p. 176, &c. 4to. Lond. 1827.

† Dr. O'Beirne, in Trans. of King's and Queen's College of Physicians, vol. iv. p. 386, &c.

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GEN. X. SPEC. II. Dysenteria chronica.

Hence, the symptoms must vary according to the progress of the disease, and the extent of the structural injury, from a simple relaxed state of the bowels, producing diarrhœa, uniformly accompanied with a greater or less degree of tenesmus, to a permanent ulceration, pouring forth purulent matter, or a more compound colluvies, sometimes watery like the washings of raw flesh, sometimes coagulated like dirty cream, and sometimes black and tenacious as pitch; and, in most cases, intolerably fetid*. Occasionally, indeed, there is a dejection of sordid pus in considerable abundance, in consequence of the bursting of an abscess that has been long forming in the liver or some other organ, and has discharged its contents immediately or intermediately into the intestinal canal†. And we may hence see abundant cause for those colliquative sweats, dry distressing cough, and other symptoms of hectic fever, which so frequently accompany this form of dysentery.

Symptoms varied by accidents.

Chronic dysentery may therefore, in its simplest and mildest state, be regarded as a GLEET of the larger intestines; produced, as urethral gleet is, by a morbid relaxation of the mucous glands of the part affected, and accompanied with that sort of irritation, which is the usual cause of increased secretion in debilitated organs.

Whence a gleet of the larger intestines.

If the irritation be of any considerable extent over the intestinal canal, the peristaltic action is often permanently excited, and we have then an obstinate and weakening diarrhœa, pain at the pit of the stomach, with loss of appetite, and other dyspeptic symptoms.

Diarrhœa whence produced.

If the same irritation ramify, whether by sympathy or continuous action, to the liver, we often find this organ also stimulated to a very considerable excess of secretion; when there is a frequent flow of bilious fluid from the rectum sometimes nearly pure, but more generally depraved, and intermixed in its passage with other materials; constituting that variety of the disease which, by practitioners in the East, has been often denominated BILIOUS OR HEPATIC FLUX‡.

Bilious or hepatic flux.

* O'Brien, on the Acute and Chronic Dysentery of Ireland, p. 58. Dublin, 1822.
† R. W. Bampfield on Tropical Dysentery, &c. p. 3. Lond. 8vo. 1819.
‡ Curtis, on the Diseases of India.

GEN. X. SPEC. II. Dysenteria chronica.

Not unfrequently, however, the discharge from the rectum is pure or depraved blood, instead of bile; the relaxed and debilitated capillaries of the organs chiefly affected, pouring forth this fluid in great abundance by anastomosis, or a gangrenous erosion of the tunics of larger vessels. This case is correctly denominated BLOODY FLUX.

Bloody flux.

Sometimes defined by duration.

In the late epidemic dysentery in Ireland, Dr. O'Brien included all those cases under the present species which ran on to a longer period than six weeks, and were accompanied with little or no fever. The most numerous sufferers were the aged and infirm, who had previously laboured under diseases of the liver, or some other abdominal organ.

In an advanced stage often fatal.

From the extensive range of the morbid action, the impoverished state of the constitution, and consequently its difficulty of rallying, it is not often that a patient recovers from this form of the disease when it has once passed from its mild or simple stage into a severer or more complicated course: and, on this account, Dr. L. Frank has asserted, that it is essentially more fatal than the acute species.

Post-obit dissections.

Post-obit dissections have given nearly the same appearances as we have already noticed; there is abrasion or ulceration of the mucous membrane of the intestines;—the colon is very generally found thickened and contracted through its whole extent, but particularly in its lower flexure. The smaller intestines are rarely traced in a state of ulceration; but patches of a deep-red colour are found in scattered plots, and especially on the ileum. The liver is not always affected in its structure, though more frequently than in the acute form: the gall-bladder is usually distended with deep-brown or dark-yellow bile, evincing a paresis or obstruction in the cystic duct.

Therapia.

The THERAPEUTIC INTENTIONS are here to change the nature of the morbid and irritable action; to diminish the exhausting discharges; and to give tone to the languid and impoverished frame.

Calomel with opium.

For the first purpose, the most effectual medicine is calomel, either alone or intermixed with opium. "If, in treating of the *acute* form of flux," says Dr. Ballingall, "I have refrained from an indiscriminate, and, as I conceive, unmerited commendation of this powerful medicine, it is

Gen. X. Spec. II. Dysenteria chronica.

only in hopes of being able to urge its employment with double force in the form of disease now under consideration; and to recommend an implicit reliance on it in the chronic form of flux; to ascribe to it an almost unlimited power in the disease; and to express an opinion, that it will seldom disappoint our most sanguine hopes." Its effects in India, where torpitude and congestion are more frequent and more excessive, than in cooler climates, seem to give a full sanction to this unqualified recommendation, and authorize its employment in large doses. In our own country, though very far from affording universal success, it is of pre-eminent importance; but as it requires a long perseverance in its use, it will be found an error to load the system with it suddenly. In Ireland, it was most beneficially employed in the form of the blue pill, combined with opium and a minute appendage of emetic tartar.

Terebinthinate preparations.

Here, too, the terebinthinate preparations may frequently be had recourse to with some confidence; as may also, for the same purpose of improving the local action, the essential oil of turpentine and the balsam of copaiva. As an aperient, oil of castor may generally be employed with less excitement of griping than in the acute form: but whatever laxatives are had recourse to, they should always be of as mild a character as possible; and hence rhubarb, in combination with small doses of calomel, or Epsom salts, is often preferable to castor oil.

Oil of castor or other mild aperients.

Treatment.

By keeping the bowels free from irritation in this gentle manner, we indirectly check the morbid discharges of whatever kind by which the disease is so peculiarly distinguished. And where more direct and powerful means are necessary, the compound chalk mixture with opium, various preparations of kino or catechu, or the acetate of lead, in solution, or pills, or small doses of the sulphate of copper joined with opium, may be tried.

Astringents.

Diet.

The diet should be bland and nutritious, composed chiefly of milk, as recommended by Sir John Pringle, or of vegetable mucilages, as rice, arrow-root, sago and salep. And as soon as the local irritation has manifestly subsided, a more cordial and tonic plan should be entered upon; animal food be allowed; the warmer bitters and metallic corroborants be prescribed, as cascarilla, columbo, sulphate

When convalescent cordials and tonics.

GEN. VII. SPEC. X. Empresma peritonitis.

δ Chronica. Chronic peritonitis.

Progress slow and insidious; pulse accelerated; little or no tension of the abdomen; sense of pricking, or slight tenderness in the belly; bowels generally costive, sometimes loose.

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How far related to puerperal fever.

# GENUS XI.

## BUCNEMIA.

### *TUMID-LEG.*

TENSE, DIFFUSE, INFLAMMATORY SWELLING OF A LOWER EXTREMITY; USUALLY COMMENCING AT THE INGUINAL GLANDS, AND EXTENDING IN THE COURSE OF THE LYMPHATICS.

GEN. XI. Genus new to nosology, but necessary.

THIS genus is new to nosological classifications: but it is necessary, in order to include two diseases which have hitherto been regarded by most writers as totally unconnected, and treated of very remotely from each other; but which, though occurring under very different circumstances, are marked by the same proximate cause, in most instances affect the same organs, and demand the same local treatment. They consist of the following species:

1. BUCNEMIA SPARGANOSIS. PUERPERAL TUMID-LEG.
2. ——— TROPICA. TUMID-LEG OF HOT CLIMATES.

Origin of the generic term.

As the present genus is new, it has been necessary to distinguish it by a new name; and on this account the author has made choice of that of *Bucnemia*, from βου, a Greek augment, probably derived from the Hebrew בע or בעה "to swell, augment, or tumefy," a particle common to the medical vocabulary; and the Greek noun κνήμη, "crus," or "the leg," literally therefore, "bulky or tumid leg."

## SPECIES I.

## BUCNEMIA SPARGANOSIS.

### *PUERPERAL TUMID-LEG.*

THE TUMID LIMB PALE, GLABROUS, EQUABLE, ELASTIC, ACUTELY TENDER; EXHIBITING TO THE TOUCH A FEELING OF NUMEROUS IRREGULAR PROMINENCES UNDER THE SKIN; FEVER, A HECTIC: OCCURRING CHIEFLY DURING THE SECOND OR THIRD WEEK FROM CHILDBIRTH.

GEN. XI. SPEC. I.

Natural connexion of this species with the ensuing.

THE tumid-leg of childbirth has mostly been contemplated as a very different affection from that of hot climates, and has rarely been treated of in connexion with it. In the present author's first edition of his Nosology, the ordinary arrangement was so far adopted, that the two species were placed remotely from each other, though a distinction between elephantiasis and the tumid-leg was strongly enforced.

Synonyms.

The tumid-leg of lying-in women has been described by different authors under a variety of names, as *phlegmasia dolens, phlegmasia lactea, ecchymoma lymphatica,* and by Dr. Cullen, as *anasarca serosa;* few of which express the real nature of the affection, and some of them a source obviously erroneous.

Derivation of the specific term.

By Dioscorides it was denominated sparganosis, from σπαργάω, "to tumefy and distend:" *tumeo et distentus sum,* as rendered by Scapula; and, as the term is sufficiently expressive, it has been preferred on the present occasion.

Causes misunderstood and doubtful.

By most writers, till within the last twenty or thirty years, the swelling has been ascribed either to a suppression of the lochia, or a redundancy of milk, and a morbid deposition in consequence of such redundancy. Mauriceau regarded it as a metastasis of the lochia, and Puzos as a metastasis of the milk; whence the French practitioners call it to the present day, *depôt laiteux,* or *lait répandu;* and the Germans *milchstreichen.* A minuter attention to the subject, however, has sufficiently shown, that this complaint has seldom any connexion with the milk: perhaps never. It has occurred where the breasts have been desti-

tute of milk, and where they have overflowed; where suckling has been relinquished, and where it has been continued. It is not long since, that I was consulted by a young woman labouring under it, who was suckling her infant, without any complaint of the breast whatever.

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It is as little influenced by the state of the lochia as by that of the milk. It attacks women of all ranks and of all habits; the healthy and the diseased; the lean and the corpulent; the sedentary and the active; the young and the middle-aged. It also occurs in all seasons and situations; and has never perhaps been known to appear in any other part of the body, than the lower extremities.

Whether ever found in the upper limb.

My esteemed friends Dr. Hosack and Dr. Francis, of New York, have however ingeniously contended, that it has also been found in the upper * as well as in the lower limbs, and in males as well as in females: and they especially appeal to one case communicated to them by Dr. Heermans of Ontario, which, could it be relied on, would go far to settle the question; but as it appears to me that this, like various similar cases that have occurred to the present author, was an instance of erratic or metastatic rheumatism rather than sparganosis, we are not at present authorised to deviate from the ordinary character assigned to the disease, or to generalize it in the manner which this more extended view of its occurrence would demand of us. Other local affections, indeed, make an approach to it of which Dr. Denmark has described one that occurred in a male, which, however, he prudently avoids calling a phlemasia dolens, contenting himself with saying that it resembled it; while Dr. Davis, as we shall have to observe presently, seems to have mistaken for this complaint an inflammation of one of the larger veins in the pelvis or its vicinity.

So affirmed by Hosack and Francis, as also in males.

But the cases doubtful.

[The editor is happy in having here an opportunity to remark, that Dr. Davis only attempted to show the grounds he had for thinking, that phlegmasia dolens was essentially connected with inflammation and obstruction of the iliac veins; and he has undoubtedly proved by dissection, that in some particular instances, corresponding, as he judged, though not as our author believed, to the latter disease,

* In Mr. Fraser's case, the left thigh and *arm* were considerably larger than the right. See Edin. Med. Jour. No. xc. p. 17.

GEN. VII. SPEC. X. α E. Peritonitis propria.

thickened peritonæum, unaccompanied with any fluid blood; masses of fibrin, destitute of the colouring particles of the blood; and, lastly, pure blood itself, when the effusion was considerable.

Most examples of peritonitis, terminating favourably, leave after them organized adhesions. In general, little gas is found in the bowels, and it is not to it, therefore, that the great distention of the abdomen, remarked before death, can be ascribed. One remarkable effect of inflammation of the peritonæum is to lessen its transparency, and render it even quite opaque.]

Substance of different organs not equally consenting with their surrounding membranes. Illustrated.

From what has been said, it appears that the membranous tunics of the different viscera do not, therefore, always hold an equal intimacy of action. And it would be interesting to follow up the discrepancy, and draw a scale of their readiness, or ineptitude, to sympathize with the viscera which they cover. The membranes of the brain, as we have already seen, are so peculiarly disposed to partake of the inflammatory action of the parenchyma, as to render solitary inflammation of the one or of the other a rare occurrence. In the lungs and in the heart the play of relationship is far less conspicuous, and in the viscera of the abdomen it rarely takes place. And it is owing to this circumstance, that we are able so generally to draw the line between inflammation of the peritonæum and of the intestines, from the pain being much more superficial in the former, than in the latter case, and, in many instances, not accompanied with sickness, or any other disturbance of the alvine canal. Portal is too little disposed to admit this distinction, and seems to think, that idiopathic inflammation of the peritonæum is by no means a common disease, and that, when it does exist, its manifestation is far from being clear*. But this is to render a general rule universal, and to sweep away from it the exceptions that chiefly establish its proof.

Objection of Portal.

Causes.

The causes are those of inflammation in general, as cold, external injuries, ulceration and rupture of some portion of the alimentary canal, and consequent extrava-

* Mém. sur la Nature et le Traitement des plusieurs Maladies, tom. iv. 8vo. Paris, 1819.

the lower extremity coming on after fever, and corresponding very much in its character and progress to phlegmasia dolens, has very recently been described by Dr. Tweedie, who points out its differences from common œdema of the limb, and represents it as an inflammation of the cellular tissue*.] GEN. XI. SPEC. I. Bucnemia sparganosis.

In about twelve or fourteen days after delivery, according to the common course of the disease, the patient complains of pain in the groin of one side, accompanied with the general train of pyrectic symptoms, but without the precursive shivering. The part affected soon becomes swelled and distended, the swelling usually extending to the labia pudendi of the same side, and down the inside of the thigh to the leg and foot; in a day or two, the limb is double its natural size, is hot, exquisitely tender, and moved with great difficulty. It has not, however, the ordinary external signs of inflammation, but is hard, smooth, glabrous, pale, and equable, except where the conglobate glands are situate, which are corded and knotty, as in the groin, the ham, and the back and fleshy part of the leg. There is, occasionally, an uneasiness in the loins and in the region of the pubes on the same side. The swelling has sometimes appeared as early as twenty-four hours after delivery, and sometimes not till five weeks afterwards. The accompanying fever, which is of a hectic form, usually declines about the fourteenth or twenty-first day, but in some cases runs on for six or eight weeks, and the patient becomes greatly emaciated. The first appearance of improvement takes place about the groin, where the disease commenced the pain and tumour gradually subsiding in this quarter, and the amendment spreading in a continuous line. Sometimes, though rarely, both sides are affected simultaneously, and, in a few instances, the sound leg has exhibited something, though a less degree of the same complaint, as the diseased leg has improved. The improvement is very slow; and, in many cases, the affected limb continues weak and with morbid enlargement through life. Description.

[Velpeau's opinion, that the origin of the disease is connected with an alteration of the sacro-iliac symphysis, has been already noticed.] Dr. Whyte, M. Caspar, and Mr. Proximate cause.

* Edin. Med. Jour. No. XCVII. p. 258.

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common poultice; and this is obtained more easily, and with infinitely less fatigue to the patient or danger of giving him cold, than in the ordinary way of applying fomentations. When the bowels have been well opened, opiates may be given with freedom, and especially in union with ipecacuan or antimonials to determine to the surface.

Treatment.

β E. Peritonitis omentalis.

When the INFLAMMATION commences or is seated IN THE OMENTUM or EPIPLOON, the pain is more limited, and points rather towards the superior and middle region of the abdomen, a little above and below the navel; though it sometimes inclines to the right or left hypochondrium.

Does not readily suppurate.

The peritonæum itself does not readily pass into a secretion of genuine pus; and still less so the omentum, which, where ulceration takes place, generally evinces a foul and sanious secretion.

Illustrated from Sauvages.

Sauvages gives a striking example of this in a woman, who was at first attacked with an acute lancinating pain in the umbilical region; and had a tumour formed towards the right hypochondrium about the size of a man's fist, which by degrees occupied the whole abdomen. By an application of emollient cataplasms, the pain and general swelling were diminished in the course of three days; but a fluctuation in the abdomen was next detected, like that of an ascites; in consequence of which, a trochar was introduced into both sides of the abdomen, and a putrid ichorous fluid was discharged, which induced the operator to enlarge the opening; when sloughs of the omentum, already separated, came away with an intolerable stench, and with about two pounds of what Sauvages calls ichorous water. But the skill of the surgeon was overpowered by the disease, and the patient fell a victim to it *.

γ E. Peritonitis mesenterica.

The mesentery has but a small degree of sensibility, and hence, as well as from the greater depth of the seat of the disease, MESENTERIC INFLAMMATION is only discoverable by pressure. If the affection be strictly mesenteric, the symptoms are mild and gentle; but this is a rare case, and chiefly occurs when the glands are obstructed, and any accidental irritation is applied to them.

Mostly complicated with other complaints.

Most commonly it is catenated with inflammation of the spleen, liver, or

* Nosol. Med. Class. III. Ord. III. XVI.

spirit afterwards: has restrained it to the female sex, and to the immediate neighbourhood of the pelvis. "The proximate cause, says he, of the disease called phlegmasia dolens, is a violent inflammation of one or more of the principal veins within, and in the neighbourhood of the pelvis, producing an increased thickness of their coats, the formation of false membranes in their internal surface, a gradual coagulation of their contents; and occasionally a destructive suppuration of their whole texture: in consequence of which the diameters of the cavities of these important vessels become so gradually diminished, sometimes so totally obstructed, as to be rendered mechanically incompetent to carry forward into their corresponding trunks the venous blood, brought to them by their inferior contributing branches*."

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Here again we have a very accurate description of a disease by no means uncommon, which moreover is supported by a variety of cases, most of which have unfortunately a history of their dissections appended to them, containing a clear manifestation of the nature of this very fatal inflammation, and for the most part of the formation of a false membrane within the affected vessel. But if the present author have succeeded in truly delineating the disease before us, either in his specific definition or his diagnostic description, it must be obvious to every reader who will compare them with the appearances laid down by Dr. Davis, that two different inflammations are referred to in the respective statements, the symptoms of which cannot possibly co-exist; that the very fatality of that described by Dr. Davis is of itself a sufficient proof of a clear and very striking distinction†: and that though both occasionally take place soon after childbirth, the enlargement he has treated of is far less a phlegmasia dolens, than a particular variety of venous inflammation, the PHLEBITIS of several authors: for a striking example of which, proceeding from an obscure cause, and extending over the arm instead of over the leg, I may refer to Dr. Duncan's interesting case,

Accurately described, but not sparganosis.

* Med. Chir. Trans. vol. xii. Part II. p. 3.

† As Dr. Davis's main object was to record the appearances on dissection, the circumstance of his having brought forward only fatal cases must not be received as a proof of the general or common fatality of the disease.—EDITOR.

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in the Transactions of the Edinburgh Medico-Chirurgical Society*. It gives us the same general swelling over the entire limb; rather phlegmonous than erythematous; but, to adopt the author's own simile, still more resembling an anasarcous affection, yet without pitting. It gives, moreover, the same fatal result; and, on examination after death, developes the same thickening of the coats of the vein, and the same obstruction from morbid secretions. And to show still further how little foundation there is for this doctrine, we have in the very next article in the same volume, composed by the same indefatigable author, various cases of diffuse inflammation of the cellular membrane, without any affection of the neighbouring veins, so closely approaching the general character of the sparganosis before us, that he finds a difficulty in calling them by any other name, and appears greatly inclined to adopt Dr. Hull's hypothesis of the disease†.

Hypothesis of Denman.

There is apparently as little reason for the hypothesis of Dr. Denman, who, while regarding it as an inflammation of the lymphatics, refers the inflammation to an absorption of some acrimonious matter secreted by the uterus: for the disease has occurred where there has been no more morbid action of the uterus than of the mammæ; and all the secretions have proceeded healthily and in their proper quantity.

Curative plan.

Swathe of wetted flannel.

Purgatives.

Sedatives.

The cure is to be attempted first by a free application of leeches all along the course of the limb, poppyhead fomentations, or what is better, a swathe of flannel wrung out in hot water applied over the whole extent of the limb, surrounded by a loose bandage of sheeting. To this plan should be added purgatives of considerable activity, and, where the irritation is considerable, free doses of Dover's powder. General bleeding is rarely, though sometimes necessary. As soon as the inflammatory symptoms have a little subsided, local stimulants may be had recourse to, so as to excite the torpid absorbents to increased action: of which, the most useful in the author's hands has been the liniment of ammonia with laudanum.

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* Case of Inflammation of the Cephalic Vein which terminated fatally, vol. i. p. 439.

† Trans. Medico-Chir. Soc. Edin. vol. i. p. 582.

The laudanum, on a cursory view, may seem to add to the vascular torpor: but it tends to take off the pain and soreness that still remain, and thus enables the tranquillized vessels the more easily to recover their tone. Yet whatever application of this kind is employed, it should be accompanied with gentle friction, continued for half an hour or more, if the limb is able to bear it: for the friction itself is of essential service, and tends, perhaps, even more than any other local stimulant, to restore the limb to a healthy action.

GEN. XI. SPEC. I. Bucnemia sparganosis. Volatile liniment with laudanum. Gentle friction.

Mr. Trye advises, for the same purpose, the use of mercurial ointment; and others, that of small doses of calomel. But neither have proved decidedly useful; while, in some instances of great debility, they have evidently produced mischief. The chronic weakness is to be removed by a continuance of the friction, bathing with sea-water, or, which is much better, bathing in the sea itself, an elastic flannel bandage, horse exercise, pure air, and, if necessary, general tonics and astringents.

Mercury. Chronic weakness how to be removed.

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## SPECIES II.

## BUCNEMIA TROPICA.

### *TUMID-LEG OF HOT CLIMATES.*

THE TUMID LIMB HARD, LIVID, AND ENORMOUSLY MISSHAPEN: SKIN AT FIRST GLABROUS, AFTERWARDS THICK, SCALY, AND WARTED: SUCCESSIVELY BULGING AND INDENTED: OCCURRING CHIEFLY IN TROPICAL CLIMATES.

THIS species is intended to comprise that singular disease, known in the West Indies, and generally over Europe, by the name of *Barbadoes-leg*, from its being indigenous to the island of Barbadoes. Yet it is not in Barbadoes alone that it makes its appearance: for it is of high antiquity, as well as of very wide range in hot, and especially in tropical

GEN. XI. SPEC. II. Barbadoes-leg here intended.

GEN. XI. SPEC. II. Bucnemia tropica.

climates; and constitutes the genuine DAL-FIL (داء الفيل) or elephant-leg of the Arabians, being so denominated from its livid, tumefied, scaly, mis-shapen appearance. As the Arabic dal or daul-fil (داء الفيل) is literally elephantiasis or elephant-leg, and as the Greeks distinguished another and very different disease by the name of elephantiasis, the Greek translators of the Arabian writers were very generally betrayed, from the unity of the name, into a confusion of the two disorders, as we shall have occasion still further to observe when treating of proper ELEPHANTIASIS under the fourth order of the present class: and the confusion has, in a considerable degree, descended to our own times, insomuch that many writers of the present day continue to jumble the elephantiasis, or elephant-*leg*, of the Arabians, with the elephantiasis, or elephant-*skin*, of the Greeks, and to describe them as a common affection, though no two complaints can be more unlike: the former being a mere local malady, produced accidentally, and confined to the individual who labours under it; and the latter a constitutional disease, in every quarter hereditary, and in most quarters contagious.

Often confounded with elephantiasis: and whence.

The Arabians, however, had the disease called elephant-skin, the elephantiasis of the Greeks, by themselves called juzam (جزام) as well as the dal-fil or elephant-leg, the disease before us. And, as the malady called leprosy, and by the Arabians beras (برص), was supposed by many physicians, as well Arabian as Greek, to terminate frequently in juzam, or proper elephantiasis, the disease before us has occasionally also been confounded with leprosy as well as with elephant-skin, and all the three affections have been huddled together by many writers into one common disease. Even Dr. Schilling, a late practitioner of considerable merit at Surinam, has not escaped this last error; for he describes the tumid-leg under the name of leprosy; confuses its earliest symptoms and appearance with those of the leprosy of the Greeks, and especially with those of the lepra or *lepriasis candida*, and then distinguishes elephantiasis, the disorder he professes to be the immediate subject of his pen, as a peculiar branch of leprosy, merely

Sometimes confounded with leprosy: and whence.

Illustrated.

varied by its commencing in the feet, instead of in any other part of the body: and, carrying on the confusion, he next interprets the tumid-leg, or disease before us, as a mere variety of elephantiasis *. GEN. XI. SPEC. II. Bucnemia tropica.

For a distinct and more correct account of this species, we must turn to the writings of Dr. Hillary† and Dr. Hendy, who have judiciously separated it from both the leprosy and the elephantiasis of the Greek writers, and treated of it as an individual malady: the former under the name of "Barbadoes-leg," and the latter under that of the "Glandular disease of Barbadoes." It is singular, however, that Dr. Hendy should have adopted the erroneous idea, that the disease before us is not only endemial to Barbadoes, but that it is to be found nowhere else; and that patients who migrate from this island for a cure, are almost sure to obtain one, unless in a chronic or inveterate stage of the disease, to whatever quarter they direct their course. It has been known immemorially in India, and is by the oriental writers, and even by Sir William Jones, justly distinguished from the *juzam*, which he tells us must not be confounded with the *dal fil*, or swelled legs described by the Arabian physicians, and very common in that country. It is also indigenous to the Polynesian isles, where it takes the name of yava-skin, as being supposed to originate from drinking the heating beverage called yava; and, like the gout among ourselves, is regarded in a sort of honourable light.

More correct view of Hillary and Hendy.

Error of Hendy in limiting the disease to Barbadoes.

Known in India as well as in Arabia.

Known in Polynesia.

The tropical bucnemia, like the puerperal, is occasioned by an effusion of coagulable lymph into the cellular membrane under the skin of the part affected, in consequence of inflammation of the lymphatics of the lower limb, and especially of the inguinal glands; the cause of which is at present quite unknown. Description.

[The doctrine that the disease essentially consists in an inflammation of the lymphatic vessels and glands, may be said now to be on the decline. In fact, we commonly see these organs inflamed, both in warm and cold climates, without any consequences resembling bucnemia tropica.

* G. G. Schillingii de Leprâ Commentationes, 8vo. Lugd. Bat. 1776.

† Works, vol. i. p. 549, 4to. edit. 1799.

GEN. XI. SPEC. II. Bucnemia tropica.

Dr. Graves * notices various circumstances, amounting very nearly to a complete refutation of the opinion. Thus, he particularly adverts to a passage in Dr. Hillary's work, from which it appears, that the disease sometimes attacks the arm, scalp, ears, back part of the neck, the loins, &c. Enormous chronic growths of the integuments and cellular membrane, sometimes affect the arm, penis, and scrotum, even in this country; the disease closely resembling the Barbadoes-leg, and examples of which had been seen by Mr. Chevalier †. It is obvious, as Dr. Graves has remarked, that, in such parts, the swelling could not have arisen merely from glandular inflammation; and as, from various facts which he has brought forward, it is proved, that inflammation of the skin and subjacent cellular tissue is in itself capable of producing a swelling, in all other respects, similar to that of Barbadoes-leg, he is inclined to think, that a more accurate investigation of the subject would have induced Dr. Good to modify the opinion he has delivered on the subject.

As far as the point can be decided by a reference to cases, very similar to the Barbadoes-leg, which have occasionally taken place in Great Britain or Ireland, the editor certainly joins Dr. Graves in the belief, that the disease does not arise from, or essentially consist in, disease of the lymphatic glands or vessels. In the highly interesting example of an extraordinary enlargement of the right lower extremity, recorded by Mr. Chevalier, and which occurred in an English woman in this metropolis, no change in the absorbent glands could be detected after death, either at the groin, or within the pelvis ‡. In a very similar case, related by Dr. Graves, and which happened in a young man, twenty-five years of age, admitted into the Meath Hospital, "the swelling had commenced many years before his admission into the hospital, and had attained its enormous size gradually, and without the least pain, or inflammation of the skin, the subjacent adipose tissue, or *inguinal glands.*" Dr. Graves has no doubt, that, as in Chevalier's case, the tumefaction arose from an extraor-

* Trans. of the King's and Queen's College of Physicians, vol. v. p. 65.
† See Med. Chir. Trans. vol. ii. p. 71.
‡ Op. cit. vol. ii. p. 67.

dinary growth of the skin and subjacent adipose membrane, quite independently of inflammation *. GEN. XI. SPEC. II. Bucnemia tropica.

The diseases, described by Mr. Chevalier and Dr. Graves, seem to the editor to correspond to the enormous growths of the scrotum, so common in Egypt, and other warm countries, yet sometimes met with in France, this country, and other parts of Europe †. Dr. Graves is of opinion, that the example, which he has published, is entirely different both from phlegmasia dolens and the Barbadoes-leg, which affections, he says, arise from inflammation. It certainly appears, that some extraordinary enlargements of the lower extremity have depended upon a chronic growth and thickening of the integuments and cellular tissue, no inflammation having occurred, at all events, until the disease was far advanced. Yet, in other instances, a similar alteration of the skin and cellular membrane has been preceded either by an attack like that of phlegmasia dolens, as happened in Mr. Chevalier's example, or by fever, and heat and redness of the skin, as illustrated in one curious modification of the disease, described by Dr. Graves, and, as it seems, by no means uncommon in Ireland, where it affects the arms, perhaps more frequently than the legs.]

In the tumid-leg of hot climates, the skin, instead of maintaining the paleness of the first species, very soon becomes suffused with a deep red or purple hue; while the saburral fluid, that exudes from the cutaneous exhalents, concretes, as its finer parts fly off, into rough and sordid scales, and the skin itself becomes enormously thickened and coriaceous.

The effusion is usually preceded by a febrile paroxysm, induced by the glandular inflammation just noticed; and which, from the first, discovers a tendency to recur, though often at irregular periods, so as to resemble an erratic intermittent. Every fresh attack adds considerably to the effusion, and consequently to the morbid size of the limb, and exacerbates every symptom: and hence the greater severity of this species than of the former, and the monstrous disfigurement of the leg and foot, by which it is

Preceded by a febrile paroxysm: subject to irregular returns.

* Trans. of the King's and Queen's College of Physicians, vol. v. p. 56.

† See the Editor's Dict. of Practical Surgery, art. SCROTUM.

GEN. VII. SPEC. XI. α E. Gastritis adhæsiva.

bility, and not unfrequently with hæmatemesis; by which last signs it is chiefly to be distinguished from idiopathic indigestion. The death however is commonly sudden, within a day or two, or even a few hours, from the cause just stated. M. Chardel* has given various examples of this form. M. Gerard† and Dr. Abercrombie‡ others.

[It is correctly observed by the latter writer, that acute inflammation of the stomach is not a common disease in this country; and when it does occur, the symptoms are so severe and well defined, as immediately to indicate the nature of the affection. But the stomach is liable to inflammatory action in a chronic form, which often advances so slowly and insidiously, that the dangerous nature of it may be overlooked, until it reaches that stage in which it assumes the characters of organic and hopeless disease. In the early stage, the prominent symptoms, in fact, merely indicate derangement of the functions of the stomach, and are consequently very apt to be included under the general term dyspepsia.]

Remedial process.

Gastritis in its ACUTE form has often been represented in a more dangerous light than it deserves to be; for in neither variety under this modification is it frequently attended with fatal effects under judicious treatment. In the true adhesive form, copious and repeated venesections have been very generally recommended, and have often been found of the highest advantage, particularly in robust and vigorous habits. To be, however, of any decided avail, this plan of treatment should be commenced early; for the fever is so apt to pass into a typhoid form, that, after the first two or three days, too much inroad will generally have been made upon the constitutional strength to allow the use of the lancet. If acrid poisons, or excess of eating, be the cause, an emetic should be administered; but otherwise this, as well as all other stimulants, should be avoided. Gentle cooling laxatives, a blister applied to the pit of the stomach, mild nutritive drinks, nutritious injections, and, if the pain or sickness be extreme, doses of a drachm of the

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* Monographie des Dégénerations Scirrheuses de l'Estomac. 8vo. Paris, 1808.
† Des Perforations Spontanées de l'Estomac.
‡ Edin. Med. and Surg. Journ. vol. xxi. p. 1.

paroxyms to which the constitution appears to be peculiarly subject, after a single one has taken place, by prohibiting exposure to the damp air of the evening, and by the use of tonics.



An original and chronic affection of this kind, in which the integuments of the legs were much thickened, the limbs swelled to such an extent as to prevent the patient from walking, and incrusted with such a vast quantity of brawny scurf and scales, that handfuls of them might be taken out of his bed every morning, was successfully attacked many years ago by a mistake of one plant for another. The case is related by Dr. Pulteney; and the patient, who had been recommended to swallow a table spoonful of the juice of the water-parsnep, with two spoonfuls of wine every morning fasting, was erroneously supplied with half a pint of what afterwards appeared to be the juice of the roots of the hemlock-dropwort (*œnanthe crocata*, Lin.): the first dose produced such a degree of vertigo, sickness, vomiting, cold sweats, and long continued rigor, that it almost proved fatal. So strong, however, was the patient's desire of relief, that, with the intermission of one day, he repeated the dose with a slight diminution in the quantity. The effects were still violent, though somewhat less alarming; and he persisted in using half the quantity for several weeks. At the end of a month, he was very greatly improved, and, shortly afterwards, the whole of his symptoms had nearly left him *.

Case occurring in England singularly cured.

Treatment.

Amputation of the affected leg has sometimes been made trial of, but apparently without any success. Dr. Schilling informs us, that, in some, a locked jaw takes place about the seventh day from the operation, which is soon followed by tetanus, and ends in death; that, in others, fatal convulsions ensue immediately; and that those who survive the operation have wounds hereby produced that will not heal; while the disorder, still connected with constitutional causes, often seizes on the other foot †. And, in this last assertion, he is corroborated by one or two cases related by Dr. Hendy ‡.

Amputation of no use.

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* Phil. Trans. vol. lxii.

† G. G. Schillingii de Leprâ Commentationes, 8vo. Lugd. Batav. 1776.

‡ On the Glandular Disease of Barbadoes, 8vo. 1784.

Gen. VII. Spec. XI. β E. Gastritis erythematica.

purative inflammations: for where the adhesive most readily produces adhesions, there the erysipelatous does not, as in the common cellular membrane; and where the adhesive seldom takes place, excepting from extreme violence, there this inflammation (if erysipelatous) has a tendency to produce adhesions, as in canals or outlets. It also opposes, in some degree, the suppurative, in being backward in producing suppuration even in those places where suppuration most readily takes place, such as canals and outlets; for there, as above observed, it more readily throws out the coagulating lymph. Whatever the inflammation may be, it is certainly attended with nearly the same kind of constitutional affection. The fever in both appears to be the same, viz. accompanied with debility, languor, &c.*"

Diagnostics.

The erythematic inflammation of the stomach comes on more insidiously than the adhesive; and is best characterised by the inflammatory colour of the fauces, for it usually spreads to these, and the lowness and rapidity of the pulse. The inflammation often extends through a great part of the alvine canal as well as the œsophagus; and, after a subsidence of the sickness, produces diarrhœa, and mucous discharges from the bowels. It is sometimes so gradual and tardy in its progress, as to produce little fever, or even local disturbance, for many days or even weeks.

Remedial process.

If this variety of gastritis be excited by acrid or poisonous substances, the stomach-pump should be used, or a brisk emetic be exhibited with as much speed as possible; and afterwards such antidote as the character of the poison may point out: opposing acids to alkalines, and alkalines to acid erosives, and the most active stimulants to narcotics. When the cause is internal, mild, diluent, and cooling drinks are to be employed freely. The infusion of roses will often prove one of the most serviceable medicines we can make use of; blisters should be applied and repeated, and the bowels kept open with laxative clysters.

Inflammation of the stomach is also found in the one or

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* On Blood, &c. p. 270.

# GENUS XII.

## ARTHROSIA.

## *ARTICULAR INFLAMMATION.*

INFLAMMATION MOSTLY CONFINED TO THE JOINTS; SEVERELY PAINFUL; OCCASIONALLY EXTENDING TO THE SURROUNDING MUSCLES.

GEN. XII. Origin of the generic term.

ARTHROSIA is a term derived from ἀρθρόω, "to articulate," whence arthrosis, arthritis, and many other medical derivations. The usual term for the present genus of diseases, among the Greek physicians, was *arthritis*, which would have been continued without any change, but that, for the sake of simplicity and regularity, the author has been anxious to restrain the termination *itis* to the different species of the genus EMPRESMA.

Loosely used by earlier writers.

Arthritis, then, among the Greeks, was used in a generic sense, so as to include articular inflammations generally. But as almost every sort of articular inflammation has, in recent times, been advanced to the rank of a distinct genus in itself, it has frequently become a question, to which of them the old generic term should be peculiarly restrained. And hence some writers have applied and limited it to gout; others have made it embrace both gout and rheumatism; others again have appropriated it to white-swelling: while a fourth class of writers, in order to avoid all obscurity and dispute, have banished the term altogether.

What species it should embrace:

Now gout, rheumatism, whether acute or chronic, and white-swelling, however they may differ in various points, as well of symptoms as of treatment, have striking characters that seem naturally to unite them into one common group. Gout and rheumatism are so nearly allied in their more perfect forms, as to be distinguished with considerable difficulty; and, in many instances, rather by the collateral circumstances of temperament, period of life,

connexion of gout and rheumatism.

GEN. VII. SPEC. XI. β E. Gastritis erythematica.

purative inflammations: for where the adhesive most readily produces adhesions, there the erysipelatous does not, as in the common cellular membrane; and where the adhesive seldom takes place, excepting from extreme violence, there this inflammation (if erysipelatous) has a tendency to produce adhesions, as in canals or outlets. It also opposes, in some degree, the suppurative, in being backward in producing suppuration even in those places where suppuration most readily takes place, such as canals and outlets; for there, as above observed, it more readily throws out the coagulating lymph. Whatever the inflammation may be, it is certainly attended with nearly the same kind of constitutional affection. The fever in both appears to be the same, viz. accompanied with debility, languor, &c.*"

Diagnostics.

The erythematic inflammation of the stomach comes on more insidiously than the adhesive; and is best characterised by the inflammatory colour of the fauces, for it usually spreads to these, and the lowness and rapidity of the pulse. The inflammation often extends through a great part of the alvine canal as well as the œsophagus; and, after a subsidence of the sickness, produces diarrhœa, and mucous discharges from the bowels. It is sometimes so gradual and tardy in its progress, as to produce little fever, or even local disturbance, for many days or even weeks.

Remedial process.

If this variety of gastritis be excited by acrid or poisonous substances, the stomach-pump should be used, or a brisk emetic be exhibited with as much speed as possible; and afterwards such antidote as the character of the poison may point out: opposing acids to alkalines, and alkalines to acid erosives, and the most active stimulants to narcotics. When the cause is internal, mild, diluent, and cooling drinks are to be employed freely. The infusion of roses will often prove one of the most serviceable medicines we can make use of; blisters should be applied and repeated, and the bowels kept open with laxative clysters.

Inflammation of the stomach is also found in the one or

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* On Blood, &c. p. 270.

the other of its varieties, as an occasional symptom in aphtha, measles, small-pox, and other exanthems; and, perhaps, in repelled herpes, scabies, and similar eruptions. Gen. VII. Spec. XI. β E. Gastritis erythematica.

We may here observe, that the PANCREAS is also sometimes, though rarely, affected with inflammatory action; and that in this case the symptoms are a combination of Empresma gastritis and E. hepatitis. There is pain and distention in the epigastrium, with frequent vomiting. There is also a defined tumour seated higher than the liver, and generally more polarized, but always accompanied with some degree of jaundice from its pressure on the bile-ducts. The affection often yields to depletion by cupping, brisk purgatives, and blistering *. Inflammation of the pancreas.

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## SPECIES XII.

## EMPRESMA ENTERITIS.

### *INFLAMMATION OF THE BOWELS.*

GRIPING PAIN IN THE BELLY; TENDERNESS, AND VOMITING; FEVER A SYNOCHUS.

In inflammation of the stomach, the pain is seated higher, and is rather burning than griping; this last, also, has usually some degree of hiccough, and great dejection of mind: neither of which belongs to inflammation of the intestines; and it is by these characters, that the two are to be distinguished from each other. Stoll adds, that intestinal inflammation is also accompanied with a suppression of urine: but we cannot rely upon this as a specific symptom. Gen. VII. Spec. XII. How distinguished from gastritis.

Our opening remarks upon gastritis, in respect to the

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* Perceval, in Trans. King's and Queen's College, Dublin, vol. ii. p. 128. 1824. To all who desire a very correct knowledge of affections of the mucous membrane of the stomach, the editor strongly recommends the Memoir by M. Louis, entitled "Du Ramollissement, &c. de Membrane Muqueuse de l'Estomac." Mém. Anat. Pathol. Paris, 1826.

Gen. VII. Spec. XI. β E. Gastritis erythematica.

purative inflammations: for where the adhesive most readily produces adhesions, there the erysipelatous does not, as in the common cellular membrane; and where the adhesive seldom takes place, excepting from extreme violence, there this inflammation (if erysipelatous) has a tendency to produce adhesions, as in canals or outlets. It also opposes, in some degree, the suppurative, in being backward in producing suppuration even in those places where suppuration most readily takes place, such as canals and outlets; for there, as above observed, it more readily throws out the coagulating lymph. Whatever the inflammation may be, it is certainly attended with nearly the same kind of constitutional affection. The fever in both appears to be the same, viz. accompanied with debility, languor, &c.*"

Diagnostics.

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Remedial process.

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Inflammation of the stomach is also found in the one or

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* On Blood, &c. p. 270.

curious, as showing the singular forms which this morbid Proteus sometimes affects, and the various seats it occupies; as also, that a life of abstemiousness and activity is no certain security against its attack: for Mr. Hunter had, at this time, drunk no wine for four or five years, and allowed himself but little sleep at night. GEN. XII. Arthrosia.

Arthrosia, therefore, as a genus, may, I think, be fairly allowed to embrace the following species:

| | | |
|---|---|---|
| 1. | ARTHROSIA ACUTA. | ACUTE RHEUMATISM. |
| 2. | ——— CHRONICA. | CHRONIC RHEUMATISM. |
| 3. | ——— PODAGRA. | GOUT. |
| 4. | ——— HYDARTHRUS. | WHITE-SWELLING. |

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## SPECIES I.

## ARTHROSIA ACUTA.

### *ACUTE RHEUMATISM.*

PAIN, INFLAMMATION, AND FULNESS USUALLY ABOUT THE LARGER JOINTS AND SURROUNDING MUSCLES; OFTEN WANDERING; URINE DEPOSITING A LATERITIOUS SEDIMENT; FEVER A CAUMA.

THE disease varies in respect to violence of the fever, and seat of the pain. The varieties, determined mostly from the last feature, are as follow: GEN. XII. SPEC. I.

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| α Artuum. Articular rheumatism. | Pain felt chiefly in the joints and muscles of the extremities. |
| β Lumborum. Lumbago. | Pain felt chiefly in the loins; and mostly shooting upwards. |
| γ Coxendicis. Sciatica. | Pain felt chiefly in the hip-joint, producing emaciation of the nates on the side |

GEN. VII. SPEC. XII. Empresma enteritis.

nature of that disease in France, apply to the present as well. Enteritis, also, exhibits two varieties:

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| α Adhæsiva. Adhesive inflammation of the bowels. | Pain very acute; fever violent; vomiting frequent; and costiveness obstinate. |
| β Erythematica. Erythematic inflammation of the bowels. | Pain more moderate; fever less violent; little vomiting; and diarrhœa instead of costiveness. |

Of these varieties, the former is more frequent in this species, as the latter is in the preceding*.

Why accompanied by a synochus.

The causes of both, as also of the accompanying fever, being a synochus, may be understood from the remarks already offered upon gastritis; the intestines partaking in a very considerable degree of the character of the stomach.

[Medical writers do not always agree respecting the meaning of the term *enteritis*. Some imply by it an inflammation of the several membranes which form the intestinal canal, thus confounding peritonitis with enteritis; while others signify, by the latter word, an inflammation of the mucous membrane that invests the bowels from the pylorus to the anus. The latter meaning is probably the most correct, as founded on the difference of functions, essentially distinguishing the mucous membranes from the peritonæum. The inflammation, however, sometimes extends from the mucous coat to the others, so as to affect the whole thickness of the intestines. The inflammation may also be either acute or chronic†.]

General causes.

To the causes, enumerated under gastritis, may be added some natural or accidental organic mischief in some part or other of the intestinal canal, as ventral, inguinal, or other hernias, or introsusceptions of various kinds; or infarctions from coprostasis, scybala, or enterolithus. The plica polonica, or matted hair, is said by De la Fontaine to be a cause of this species, as other writers affirm it to be of gastritis.

The progress of the FIRST VARIETY usually commences

* Frank, ut suprà, tom. ii. § CCXXXVIII. p. 250.
† See Dict. des Sciences Méd. t. xii. p. 359.

various medical writers, that, though the disease can hardly be called hereditary, it cannot be disputed, that an individual born of rheumatic parents will be in greater risk of suffering from the complaint, than another person whose parents were quite healthy. According to a table kept by M. Chomel, out of seventy-two rheumatic patients, thirty-six had rheumatic parents, twenty-four had healthy parents, and twelve could furnish no information on the subject.] How far the observation of Sir C. Wintringham is true, that those who have suffered amputation are susceptible of this disease more than others*, the author cannot say from his own practice; but it is the remark of a physician who was not accustomed to form a hasty judgment.

GEN. XII. SPEC. I. α A. acuta artuum.

Amputation said to predispose to the disease.

[The generality of writers, down to the beginning of the present century, admit that the seat of rheumatism may be either in the muscles, or the fibrous tissues, so called by Bichat, consisting of the capsules of the joints, fibrous sheaths, the periosteum, and other fibrous membranes, the aponeuroses, tendons, and ligaments. This is the doctrine of Rivière, F. Hoffman, A. Leroy, and Pinel; to whom is to be added M. Chomel. Amongst those who believe, that rheumatism may be seated indifferently, either in the muscular system, or the fibrous, some conceive that the disease never extends to the muscles but secondarily, and that it always first attacks the fibrous or ligamentous structures. Dr. Clutterbuck, in his lectures, even defines rheumatism to be an inflammation of the ligamentous structure connected with the different joints, and covering the muscles attached to them; which is in fact the theory of Bichat. Dr. Scudamore, who regards the tendinous portions of the muscles as the seat of rheumatism, believes, that, if the muscular fibres were inflamed, they would be affected with swelling, which is not the case, while an increase of volume is always observable in the fibrous structures attacked. In opposition to the hypothesis of Dr. C. Smyth, that the essential seat of rheumatism is in the muscles, Dr. Scudamore does not consider the permanent weakness of these organs, the diminution in their size, the imperfection of their action, and the pain following their

Textures in which it is seated.

* Comment. de Morbis quibusdam. Art. 79.

GEN. XII. SPEC. I. α A. acuta artuum.

contraction, as proofs of the inflammation having its seat in the muscular fibres; but only as the consequences of the impairment of the synovial and tendinous structures, and of the extension or disturbance of these textures in a state of inflammation, whenever the muscles are put in action.

According to Bichat, acute rheumatism chiefly attacks the fibrous parts of the large joints of the shoulder, hip, knee, elbow, &c., and the muscular aponeuroses. This inflammation is not in reality attended with much swelling of the texture essentially affected, the density of which prevents any considerable effusion of lymph into its interstices. It is true, however, as Dr. Clutterbuck has remarked, that a good deal of swelling often attends acute rheumatism; but this is owing to the extension of the inflammation into the surrounding cellular texture.

Proximate cause.

A few years ago, the proximate cause of rheumatism was imputed to inflammation of the arteries themselves of the muscles and tendons; in short, to an immediate *arteritis*. Some cases and dissections, in support of this doctrine, were brought forward in France by M. Barde*, and M. M. Dalbant and Vaidy†; but the anomalous diseases to which they refer have not been generally received as examples of rheumatism.

Appearances on dissection in M. Barde's case.

In the case related by M. Barde, the heart, all the larger arteries, and even the venæ cavæ, gave evident proofs of inflammatory action. Their coats were thickened, hardened, of a dark red colour, in some parts covered with a whitish purulent matter, and in some the interior tunic was destroyed: the heart itself being considerably enlarged as well as inflamed.

[The foregoing hypothesis of arteritis being the proximate cause of acute rheumatism is sufficiently refuted by the consideration, that, if it were true, rheumatism would always accompany arterial inflammation, which is not the fact. If another argument were required to subvert the opinion, it might be readily found in the flying and very wandering nature of rheumatic pains, which pass, as Bichat‡ expresses himself, with astonishing quickness from

* Obs. communiquées à la Societé de Méd.
† Dict. des Sciences Méd. Journ. Compl. vi. Août. 1819.
‡ Anat. Gén. t. ii. p. 263.

one situation to another. Broussais, in his Leçons Patho- GEN. XII. logiques, thus accounts for rheumatism: "When," says SPEC. I. he, "the action of the skin is diminished, it is determined to another part; and here it is to the capsules or articular ligaments, the textures around the joints, that the irritation is determined.] a A. acuta artuum.

In the general course of acute rheumatism, its peculiar inflammation does not continue long enough in any one organ to injure the structure of the arterial tunics; often, in effect, as in gout, we witness its disappearance in a moment, and find it migrating to some other part of the body.

As a general rule, it may be asserted, that rheumatic in- Does not flammation does not tend to suppuration. [It is one of the characters of the fibrous system hardly ever to suppurate. Bichat believed, that rheumatic inflammation never ended in the formation of an abscess, though coagulable lymph is sometimes effused round the tendons affected.] In a few rare instances, the contrary has been known to take place*; and, in one or two cases, I have myself been a witness to an extensive abscess. But the general rule is not disturbed by such rare exceptions. The inflammation, therefore, is of a peculiar kind. There will often, indeed, be effusion, and the limb will swell considerably; but the effused fluid is gradually absorbed, and the swelling not unfrequently, though not always, is accompanied with an alleviation of the pain. tend to suppuration.

Sometimes the pains take the precedency of the fever; Description. but, in other cases, the fever appears first, and the local affection does not discover itself till a few days afterwards. There is no joint, except perhaps the extreme and minute joint of the fingers and toes, but is susceptible of its attack, although it usually commences in, and even confines itself to, the larger. Among these, however, it frequently wanders most capriciously, passing rapidly from the shoulders to the elbows, wrists, loins, hips, knees, or ankles, without observing any order, or enabling us in any way to prognosticate its course; always enlarging the part on which it alights, and rendering it peculiarly tender to the touch.

* Morgagni, De Sed. et Caus. Morb. Ep. LVII. Art. 20.—Med. Comment. Edin. vol. iv. p. 198.

GEN. VII. SPEC. XII. α E. Enteritis adhæsiva.

where fomentations are advisable, I prefer the epithem of a folded flannel wrung out in hot water, and confined with a swathe, as already recommended in peritonæal inflammation, to all other fomentations whatever.

Copious injections of warm water.

Injections of warm water alone, forcibly thrown up the rectum in as large a quantity as the bowels can be made to contain, are moreover often found of essential benefit, and are generally to be preferred to the warm bath, which, by adding to the debility, has accelerated the approach of gangrene.

After the bowels have been freely emptied, diaphoretics, and especially combined with opiates, will be the best plan we can pursue; and, if the stomach become quiescent, the patient should drink freely of diluents.

Singular rally of the constitution when apparently sinking.

There is a singular fact, noticed by Rhodius*, which sometimes occurs in this disease, and is peculiarly worthy of notice, as sustaining our hopes to the last: and it is this; that occasionally, in the extreme moment of a seeming mortification, a sudden revolution takes place, and stools are evacuated; and this, too, after the extremities have begun to grow cold, and an apparently deadly languor has overpowered the frame. In such case, we must snatch the patient from impending death by a free use of wine and warm generous cordials; closely attending, at the same time, to a copious discharge from the bowels, of which, with the liberal plan now recommended, we need not be afraid, and which we should be extremely cautious of checking by opiates.

How in such case to be assisted.

β E. Enteritis erythematica.

From the less threatening character of the symptoms, as they show themselves in the ERYTHEMATIC VARIETY, this affection often exhibits a fallacious appearance, and is misunderstood. "Sæpè," says Professor Frank, "nec febris in pulsibus umbra; ardor, dolor ad intestina aut nullus, aut certè non vehemens; nec ferè ulla tam diri morbi phænomena observantur†." Its real nature, however, is as we have explained it above: and from the debility superinduced, ascites has occasionally followed rapidly. It has been well ascertained that the seat of this variety is sometimes in the external coat of the intestines, and it is said,

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* Cent. II. Obs. 69.

† De Cur. Hom. Morb. tom. ii. p. 254.

mation to which that organ is subject, and which has its seat in the sclerotic coat, whose fibrous texture is well known.] Gen. XII. Spec. I. a A. acuta artuum.

Where fever is violent, and especially where the frame is robust, our only effectual remedies are copious bleeding and the use of diaphoretics: by the former, which will often demand repetition, we take off the inflammatory diathesis; and, by the latter, we follow up the indication which nature herself seems to point out, and endeavour, by still farther relaxing the extremities of the capillaries, to render that effectual, which, without such collateral assistance, is, as already observed, for the most part exerted in vain, and with an unprofitable expenditure of strength. The most useful diaphoretic is Dover's powder; and its benefit will often be increased, if employed in union with the acetated ammonia, and sometimes if combined with camphor. Aperients are useful to a certain extent; but they have not been found so serviceable as in various other inflammations. Small doses of calomel have occasionally, however, seemed to shorten the term of the disease, though they have not much influence in diminishing the pain. To obtain this, Dr. Hamilton has combined calomel with opium; and, in his hands, it appears to have been successful. Opium alone is rather injurious; nor has any decided benefit resulted from other narcotics, as hyoscyamus, hemlock, and aconite.

Remedial process. Copious bleeding, and diaphoretics. Aperients often little serviceable. Opium alone seldom useful.

No constitution is invulnerable to the attack of rheumatism, although the young and the vigorous fall most frequently a prey to its torture. Hence not unfrequently we meet with it in persons of weak and irritable habits, who will not bear the lancet with that freedom which gives any chance of its being useful. Local bleeding is here to be preferred, but it cannot be depended upon; since, though the pain may diminish, or even totally subside, it is, in many cases, only to make its appearance in some other quarter. Here also, if in any case, we have reason to expect benefit from uniting stimulants with diaphoretics, as ammonia, camphor, and the resinous gums and balsams.

Venesection sometimes injudicious; and local bleeding not to be depended upon.

In such habits, and particularly if opium should disagree with the system, it may be worth while to try the rhododendron (r. *Chrysanthum*, Linn.). This plant is a native of the snowy summits of the Alps and mountains of

Rhododendron,

GEN. XII. SPEC. I. α A. acuta artuum.

Siberia; and in Russia, as we learn from Dr. Guthrie, is employed very generally both in gout and rheumatism with a full assurance of success, a cure seldom failing to be effected after three or four doses*: in consequence of which, it has formed an article in the Materia Medica of the Russian Pharmacopœia for nearly a century. Dr. Home tried it upon a pretty extensive scale in the Edinburgh Infirmary, and found, that it acts both as a powerful diaphoretic and narcotic; and is at the same time one of the most effective sedatives in the vegetable kingdom. In most of the cases, it retarded the pulse very considerably, and, in one instance, reduced it to thirty-eight strokes in a minute. It has also the advantage of occasionally proving aperient. But it sometimes produces vertigo and nausea; and, as a general medicine, is not to be preferred to Dover's powder†, or even the antimonial powder with opium, where the latter can be borne without inconvenience.

often useful;

but not to be preferred to Dover's powder.

Free use of bark in debilitated habits;

It is possibly also in habits of this irritable kind, if in any, that we are to look for that extraordinary and decisive benefit from a free use of the bark at an early period of the disease, which we are told has been obtained. Contemplated as a highly acute inflammatory affection, nothing could at first sight appear to be more inconsistent with all rational practice than the use of such a medicine, and every one must feel predisposed to coincide with Dr. Cullen, when he tells us, in reference to acute rheumatism, "I hold the bark to be absolutely improper, and have found it to be manifestly hurtful, especially in its beginning, and in its truly inflammatory state‡." Yet, in direct opposition to such feelings and such assertion, we find the bark freely prescribed from the onset of acute rheumatism, apparently with success, by Dr. Morton, who seems first to have recommended it for this purpose, Sir Edward Hulse, Dr. Hugh Smith, Dr. Fothergill, Dr. George Fordyce, and Dr. Haygarth of Chester. Dr. Fordyce affirms distinctly, that, at the time of writing, he had for fifteen years relinquished bleeding in favour of the bark; and that, dur-

often advised indiscriminately.

Diversity of opinions.

* Med. Comment. vol. v. p. 434.

† Clinical Experiments, Histories of Dissections, 8vo. Edin. 1780.

‡ Mat. Med. Part II. ch. II. p. 100.

ing this period of time, he had not above two or three patients out of several hundreds for whom he had prescribed it; and had rarely met with any instance of a metastasis, a very common occurrence when he was in the habit of employing copious bleeding*. Dr. Swediaur has added his testimony to the same effect. He was first taught the value of the bark in this disease by his friend Dr. H. Smith, and strenuously adhered to its use, from perceiving its benefit, afterwards†.

Gen. XII. Spec. I. α A. acuta articuum.

Swediaur.

The success of Dr. Haygarth is not less striking and extraordinary; and the history of it is given with an air of candour that entitles it to full attention. Dr. Haygarth's residence was at Chester; and his tract lays before us the result of an extensive practice, in rheumatic diseases, in that city and its neighbourhood, during a period of thirty-eight years. His cases amount to four hundred and seventy; and of these, one hundred and seventy, or something more than a third of the entire number, appear to have been cases of acute rheumatism, or rheumatism in conjunction with fever, the rest being of a chronic kind. In the acute cases, by far the greater number of patients had the joints alone principally affected, a few the muscles alone, and the rest both the muscles and joints. The average of the pulse, in the above hundred and seventy cases, was a hundred strokes in a minute, and the blood always exhibited the inflammatory crust when drawn. Other remedies were tried; but the bark was by far the most successful. In four cases only, out of a hundred and twenty-one, it is allowed to have failed; so that we cannot be much surprised at Dr. Haygarth's conclusion, that the bark does not cure an ague so certainly and so quickly as it does acute rheumatism‡.

Haygarth.

How are we to reconcile such conflicting results, and harmonize the authorities now adverted to? I have also tried the bark in various instances from an early period of the disease, and when the bowels were free from confinement; but I have rarely met with success, and have often, like Dr. Cullen, had reason to think it injurious.

Result of the author's experience.

* On Fever, dissert. III. † Nov. Nosol. Meth. Syst. vol. i. p. 151.
‡ Clinical History of Diseases, 1805.

GEN. XII. SPEC. I. α A. acuta artuum.

The urine is often at first pale, but soon becomes high-coloured, and deposits a red sediment. It may be distinguished from gout by being little connected with dyspepsy, commencing less suddenly, evincing more regularly marked exacerbations at night, but less clear remissions at any time: to which we may add, its attachment to the larger, rather than the smaller joints; and its connexion with exposure to cold and damp. It runs on from a fortnight to three weeks; and the average of the pulse is rarely under a hundred.

Nature of the accompanying sweats.

The fever is generally accompanied with copious and clammy sweats; but the skin still feels tense and harsh; nor does the sweat issue freely from the immediate seat of pain. It seems to be an ineffectual effort of the remedial power of nature to carry off the complaint: for it is by this evacuation alone, that we can at length succeed in effecting a cure. But the perspiration will be always found unavailing, so long as it continues clammy, and the skin feels harsh, and there is a sense of chilliness creeping over the body, or any part of it, during the perspirable stage. The exacerbation, which regularly returns in the evening, increases during the night, at which time the pains become most severe; and are then chiefly disposed to shift from one joint to another.

Other fibrous textures sometimes affected.

[Acute rheumatism is not, generally speaking, attended with danger. Sometimes, however, it induces inflammation in parts of great importance to life; seemingly, in consequence of their partaking more or less of the ligamentous or fibrous tissue. The periosteum is a structure that is frequently attacked; and hence those aching pains in the bones, by which patients are severely tortured. The pericardium is another organ to which rheumatic inflammation is frequently directed: the case being indicated by great pain in the region of the heart, and great disorder in the action of this viscus. Sometimes the dura mater, another fibrous membrane, suffers; the patient being afflicted with severe head-ache and delirium, and often falling a victim to the disease. There is also no doubt, that the pleura and diaphragm are very liable to acute rheumatic inflammation; and surgeons, most experienced in diseases of the eye, recognize a species of rheumatic inflam-

mation, while the pyrectic symptoms are considerably less, and often highly disproportionate to the pain that is endured, so that the degree of pain and that of fever become no measure for each other. GEN. XII. SPEC. I. A. acuta thoracis.

There is this peculiar character belonging to the three last varieties, that though they are less disposed to wander *generally* than the first, they are peculiarly apt to run into each other's proper field, and to affect the stomach, which, in consequence, becomes sometimes enormously flatulent and expanded, with a sense of heat like that of a burning coal. If the back or loins be pressed hard to obtain ease, the pain is transferred to the side or stomach; and if the pressure be followed up into the side, it returns with violence to the back or hips; or the breathing is impeded, and can only be carried on in an erect position*. Peculiar character belonging to the local varieties.

Generally speaking, however, in these three varieties the disease is less erratic than in the first, and particularly in lumbago and sciatica. And it is owing to this fact that the loins and the hip, from having been more uniformly affected, are often so long, even after the complaint has subsided, before they recover any degree of tone, so that the patient is frequently a cripple for many months; and still suffers from chronic rheumatism. Local varieties of acute rheumatism more disposed to chronic weakness.

Local applications, which are rarely of service in the first or articular variety, as the pain is so apt to wander from every joint to every joint, may in all these be frequently employed with more advantage; and where general and copious bleeding may be contra-indicated, leeches or cupping have often afforded considerable relief. The compound camphor liniment, as an elegant rubefacient, is perhaps more frequently employed, than any other medicine of the same tribe; but it dries too soon upon the skin, and heats and stimulates without exciting moisture; and hence it is less useful than camphor dissolved in oil, or oil united with ammonia. In all these applications, however, the friction with a warm hand is of itself highly serviceable, and should be long persevered in, and frequently repeated. And on this account, essential advantage has often been derived in cases of lumbago, or where Treatment of the local varieties. Rubefacients. Friction.

* Cartheuser, Diss. de Lumbagine rheumatica. Fr. 1755.—Scheid, Diss. de Lumbag. rheumat. Arg. 1704.

GEN. VII. Sr. XIII. a E. Hepatitis acuta.

are irregular, mostly costive; the evacuations little tinged with bile, the urine often saffron-coloured; the skin is dry, the thirst extreme, with occasional sickness.

General remarks.

No physiologist has yet been able to explain the cause of the pain so generally felt in the right shoulder. It is, however, sympathetic of other affections of the liver, as jaundice, or chololithus, as well as of hepatitis; and hence it should seem to be produced by almost any morbid excitement of this organ, whether from inflammation, or the obstruction of gall-stones. [In several cases of hepatitis, reported by M. Louis, and the nature of which was verified by dissection, there was no pain in the right shoulder. Hence, this distinguished pathologist is disposed to doubt, whether it be a symptom truly appertaining to the complaint, and suspects that perhaps, when it does occur, the hepatitis is complicated with disease of the right lung, or pleura*.] The cough, which is often very distressing, is easily accounted for from the vicinity of the diaphragm to the seat of disease, and its sympathy with the liver. The sickness of the stomach is from the same cause.

Not always accompanied with a jaundiced skin:

The disease is sometimes accompanied with a jaundiced colour of the skin, and Sauvages and Sagar have made such a colour a specific symptom; but it is not always that the bile regurgitates, and, hence, such an appearance ought not to be enumerated among the pathognomonic characters.

which is also common to other affections.

Even where it exists, it is not a distinct symptom of hepatitis; for, to say nothing of proper jaundice, the feces, as Dr. Latham has well observed, may be light-coloured, and the eyes, skin, and urine peculiarly yellow, from the pressure of an indurated pancreas upon the bile ducts, and an obstruction of their course. [Out of five cases of hepatitis, detailed by M. Louis, four were attended with yellowness of the skin and pain in the right hypochondrium, but tension of the same part was remarked only in two. The concurrence of all these three symptoms accurately characterizes hepatitis; but one or two of them alone accompanying an acute disorder, M. Louis thinks, have little validity; for, with respect to the yellowness, it frequently takes place in such case without any hepatitis;

* Mém. et Recherches Anat. Pathologiques, p. 403. Paris, 1826.

so decisively of its benefit in these complaints as in cutaneous eruptions*. Gen. XII. Spec. I. Arthrosia acuta.

[There is some difficulty in judging of the real efficacy of the various plans of treating rheumatism; for, as Dr. Clutterbuck has truly observed, though ligamentous inflammation does not yield so readily as some other inflammations, it bears almost all kinds of treatment with impunity, and at last often subsides spontaneously, the disease seeming to wear itself out.]

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## SPECIES II.

## ARTHROSIA CHRONICA.

### *CHRONIC RHEUMATISM.*

PAIN, WEAKNESS, AND RIGIDITY OF THE LARGER JOINTS AND SURROUNDING MUSCLES; INCREASED BY MOTION; RELIEVED BY WARMTH; LIMBS SPONTANEOUSLY, OR EASILY GROWING COLD; FEVER AND SWELLING SLIGHT, OFTEN IMPERCEPTIBLE.

Gen. XII. Spec. II. Difficulty of arranging the disease felt by Cullen.

Concerning the proper position, and, in some sort, the nature of this disease, Dr. Cullen confesses himself at a great loss. In his Synopsis, he arranges it as a sequel of acute rheumatism, and so explains it in his definition: yet he gives it a distinct name, that of Arthrodynia, for the express purpose, as he tells us, of having a distinct name at hand for any one who may choose to regard it as a separate *genus;* and whoever is so disposed is at full liberty, he adds, as to any objection of his own. Yet, in his First Lines, he takes a different view; and perhaps a more correct one than either of the above. Chronic rheumatism, instead of being a mere *sequel* of acute rheumatism, or a distinct *genus*, is here made a separate *species* of a common genus. "Of this disease," says Dr. Cullen, Sometimes a sequel of acute rheumatism.

* Observations on Sulphureous Fumigation, as a Remedy in Rheumatism and Diseases of the Skin. Dublin, 1820.

GEN. VII. SP. XIII. α E. Hepatitis acuta.

are irregular, mostly costive; the evacuations little tinged with bile, the urine often saffron-coloured; the skin is dry, the thirst extreme, with occasional sickness.

General remarks.

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Not always accompanied with a jaundiced skin:

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* Mém. et Recherches Anat. Pathol

all kinds are found serviceable. Warm active balsams and resins, as those of copaiva, cubebs*, and guaiacum, essential oils of all kinds, from resinous substances, as turpentine and amber; from aromatic or pungent plants, as camphor and mustard, and especially cajeput, the green distilled oil from the leaves of the *melaleuca leucodendron*, are all employed in their turn; sometimes alone, where they combine a sedative with a stimulant power, as camphor and cajeput, and sometimes in union with opium, which often proves a very valuable addition.

Gen. XII. Spec. II. Arthrosia chronica.

The treatment to be founded on this view.

Resinous and terebinthinate preparations.

Alone with opium.

Most of these are, also, powerful diuretics; and as acute rheumatism is best and soonest removed by warm sudorifics, so chronic rheumatism seems to be chiefly relieved, and, indeed, radically cured, by diuretics of a like stimulus. Hence, horse-radish and garlic are often found serviceable; and turpentine still more so; which in truth forms the basis of the greater number of the medicines just enumerated. How far the arum, or dulcamara, may be specifically entitled to this character I cannot determine from my own practice. They are both introduced into the table of diuretics by Dr. Cullen, and are highly commended by many physicians of great celebrity for their arthritic virtues. But it is possible, that whatever virtues of this kind they possess are rather derived from their stimulating the excretories generally, and rousing the entire system, than from their acting specifically upon the kidneys. The *colchicum autumnale*, which has sometimes proved serviceable, has more decided pretensions to a diuretic character.

Act usefully as diuretics.

Hence the advantage of horse-radish and the alliacea.

Arum.

Dulcamara.

Meadow saffron.

Local stimulants are, here, of more service, than in the preceding species. The moxa has been more generally used on the continent for chronic, than for acute rheumatism, and is certainly more entitled to a trial. It is peculiarly recommended by Larrey†. In our own country, however, practitioners have far more generally had recourse to cataplasms of ammonia, cummin, and mustard seeds, occasionally intermixed with euphorbium or cantharides; or, in their stead, have made use of friction,

Local stimulants of service.

Burning of moxa.

Stimulant cataplasms.

* See Dr. Crane's obs. in Edin. Med. Journ. No. 79. p. 305.

† Recueil de Mémoires de Chirurgie, &c. 8vo. Paris, 1821.

Gen. VII. Sp. XIII. α E. Hepatitis acuta.

ence to saline purgatives; Dr. James Currie to mercurial ones, and especially to calomel. With respect to inunction, or an attempt to affect the constitution generally with mercury in the early and highly inflammatory stage of hepatitis, it was disapproved of by the latter eminent physician, who used calomel at first only as an evacuant.] From the costiveness that usually accompanies the disease, it is rarely necessary to unite the mercury with opium; though, where it irritates the bowels, the latter should unquestionably be given; as it should also to allay the cough, where this symptom is very distressing and prevents sleep. The mercurial course, as recommended by Sir James M'Grigor*, should be steadily persevered in, not only in hot climates, but in temperate, till a salutary change has been effected, or salivation has been freely excited. It will often be found, however, that the patient will bear a long continuance of the mercurial plan without any affection of the mouth, and will gradually and insensibly improve under it; the soreness and tension subsiding, the cough diminishing, the pulse becoming slower, and the heat and dryness of the skin yielding to a pleasant moisture; all of which are prognostics of a favourable issue. In hot climates, however, little benefit is obtained from mercury till it has produced ptyalism; while, such is the still greater degree of torpitude under which the absorbents, as well as the excretories of the liver labour, that it is often almost impossible to excite this effect by the boldest practice. "I have myself," says Dr. J. Johnson, "taken calomel in twenty-grain doses, three times a day, without experiencing the slightest inconvenience from the quantity; nay, I often found large doses sit easier on the stomach, and occasion less irritation in the bowels, than small ones. At this time too I was using every exertion, by inunction, to forward the ptyalism, yet it was several days before I could produce any effect of this kind†."

Mercurial course.

To be of use in hot climates should produce ptyalism.

Blisters.

The application of large blisters over the hypogastric region in succession is recommended by most practitioners, but I have not found them successful; and have evidently

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* Medical Sketches, passim.

† Influence of Tropical Climates, &c. 3d edit. p. 174.

tried, under the name of acupuncture, in France, by M. Berlioz* and other practitioners, and, in our own country, by Mr. Churchill†, for various affections of the above character, but particularly in severe chronic rheumatism; and, according to the accounts published, with considerable and almost instantaneous relief. The puncture produces little or no pain, and should be followed by no hemorrhage. A single puncture is often found sufficient to remove the ache, though it shoots occasionally to some neighbouring part: in which case, the same process is to be followed up to the seat of metastasis, when it is usually found to vanish altogether. The needle, when introduced, is suffered to remain in each puncture for about five minutes before it is withdrawn; and, in this part of the world, is commonly made of fine steel. [Dr. Elliotson has employed acupuncture very extensively: his experience confirms the observation of Mr. Churchill, that it is chiefly useful in the rheumatism of fleshy parts, and in chronic cases. Like the same writer, he also finds one needle, left an hour or two in a part, more efficient than several applied but a few minutes. Of forty-two cases, thus treated, thirty were cured; and the other twelve being more or less acute, were not adapted for it, and yielded to antiphlogistic treatment‡. Some writers would attempt to explain the modus operandi of acupuncture on the principle of counter-irritation; but M. Pouillet has endeavoured to show by experiments, that electro-magnetic phænomena take place in the operation§.]

GEN. XII SPEC. II. Arthrosia chronica. or acupuncture.

When the disease is limited to the extremities, whether of the arms or legs, flannel bandages have often been found highly serviceable; and they should be applied with as much tightness as the patient can bear without inconvenience‖.

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* Mémoire sur les Maladies Chroniques, les Evacuations Sanguines, et l'Acupuncture. Paris, 1816.

† A Treatise on Acupuncturation, &c. London, 1828.

‡ See Med. Chir. Trans. vol. xiii. p. 467.

§ See Journ. de Physiologie Expér. par F. Magendie; tom. v. art. i.

‖ Trans. of King and Queen's College, Dublin. Dr. Gratton, vol. i. p. 169. 1817.

GEN. VII. SP. XIII. α E. Hepatitis acuta.

took place in four out of the five histories recorded by him, he believes they are rarely wanting *.]

Found by Chisholm contagious.

Dr. Chisholm found this disease on one occasion contagious. It was at Grenada in the winter of 1786, in districts peculiarly exposed to the influence of chilling northerly winds, and possessing large tracts of marsh. The disease was lamentably mortiferous, though the symptoms were insidious, rather than violent. It usually destroyed in the course of six days—and the deaths were calculated at one in every six †.

β E. Hepatitis chronica.

Description.

In CHRONIC HEPATITIS, all the specific symptoms, as already observed, show themselves obscurely. The pulse is something quicker than usual, and there is an obtuse pain in the region of the liver; but such as would not perhaps be noticed, if it were not inquired into, and the organ pressed upon, and connected with a sudden quick expiration after an attempt to inspire deeply; and there is also an indistinct uneasiness generally, though not always, about the right shoulder; all the symptoms becoming exacerbated at a certain period of the day, commonly about four o'clock in the afternoon. But in conjunction with the proper hepatic symptoms, the most obvious are those of dyspepsy and atrophy; the appetite fails, the stomach is capricious, the animal spirits flag, and the flesh wastes away. The bowels are generally costive, and the stools often clay-coloured, though not always; and there is usually a sallowness on the skin; or a dirty greenish hue, which Dr. Darwin, from its resemblance to the colour of a full-grown silk-worm, has denominated *bombycinous*. The disease slowly advances to suppuration, or terminates in a scirrhous induration; but in many instances, and especially after a habit of hard eating or drinking, is the index of a broken-up constitution.

Excess.

Excess in eating and drinking, or indeed in any other voluptuousness, is the common cause of this variety of hepatitis in temperate regions ‡, though it sometimes follows upon obstinate quartans. It is, however, a more frequent

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* P. Ch. Louis, Mém. Anat. Pathologiques, p. 407.

† Climate and Diseases of Tropical Countries, &c. p. 66, 8vo. Lond. 1822.

‡ In this country, says Dr. Bateman, the chronic hepatitis is more common than the acute. Art. LIVER, Rees's Cyclopædia.—ED.

Radulphus, a Dominican of the thirteenth century, who writes, "cum *guttâ*, quam podagram, vel arthriticam vocant, frequenter vexareter."] Gen. XI. Spec. III. Arthrœa podagra.

The resemblance between gout and rheumatism is so close, that the one is often mistaken for the other; and both by Bergius were regarded as convertible: yet, while the former chiefly fixes on the small joints, the latter attacks the large; and the first is often hereditary, while the second is rarely or never so. Gout is far more connected with a dyspeptic state of the stomach than rheumatism: its incursions are, for the most part, more sudden, its nocturnal exacerbations less striking, but its remissions much clearer. While rheumatism mostly begins in the shoulders or elbow, gout always begins in the foot or ankle. Distinctive marks of gout and rheumatism.

Gout, moreover, is a far more complicated complaint than rheumatism; and hence there is no disease to which the human frame is subject, that has led to such a variety of opinions, both in theory and practice, many of them directly contradictory to each other, as the gout; and I may add, there is no disease, concerning the nature and treatment of which physicians are so little agreed: so that, to this moment, it constitutes perhaps the widest field for empyricism, and the hottest for warfare, of any that lie within the domain of medical science. Diversity of opinions in theory and practice. Hence opening a wide field for empyricism.

Shutting the door to disputation and unfounded theory as far as we are able, let us, in as few words as possible, attend to the clear and established history of this disease, as we would to that of any other, and draw our pathology and our mode of practice from the principles which it will be fairly found to inculcate. General history of the disease our best guide to a correct pathology.

In the first place, it is admitted on all hands, or at least with exceptions so few as scarcely to disturb the general consent, that gout, in whatever way it shows itself, is a disease of the system; or, in other words, is dependent upon a peculiar diathesis or state of the constitution. And next, it is as commonly admitted that this diathesis is, in some instances, original, and in others hereditary or derived. There are many persons in whom this complaint makes its appearance, who can trace no such affection in their ancestors; and as such persons are specially distinguished by a habit of indolence, luxury, and indulgence, and particularly in the pleasures of the table, it is from Gout a disease of the system: sometimes original; at other times derived. Nature of the constitution where the disease is original.

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| | tive or other functions, with only slight or fugitive affection of the joints. | GEN. XII. SPEC. III. Arthrosia podagra. |
| γ Complicata. Retrograde; recedent; misplaced gout. | The disease fixing on some internal organ instead of on the joints; or suddenly transferred from the joints after having fixed there; producing in the internal organ affected, debility or inflammation according to the state of the constitution. | |

The predisposing cause of a gouty diathesis, when it first forms itself in an individual, is plethora, or the state of the system produced by full living and indolence.

An entonic state of the vessels, joined with plethora, may be set down as the predisposing cause to acquired gout; and this hypothesis seems consistent with the fact of the common occurrence of gout in strong robust individuals. When it has been transmitted hereditarily it is more disposed to show itself in men of robust and large bodies, of large heads, of full and corpulent, and especially gluttonous habits, or whose skin exhibits a coarser surface, in consequence of being covered with a thicker rete mucosum.

Predisposing causes of gout.

[The middle and advanced periods of life are more disposed to gout, than the early periods. Thus, it does not commonly attack men until after the age of thirty-five, and generally not till a still later period. When the gout does appear in more early life, it seems to be in individuals in whom the hereditary disposition is very strong, and to whom the exciting causes have been strongly applied. According to Hippocrates, eunuchs are not liable to gout, nor boys previously to venery; but these opinions are probably not very correct; since, with respect to the latter, the disease is well known to be almost peculiar to an advanced period of life; and the eunuchs, who, in the time of Hippocrates, were chiefly Persian slaves, were in all likelihood confined to the strict discipline and the frugal and temperate lives enjoined to all, and therefore not exposed to the most active causes of gout. For Galen, in

GEN. XII. SPEC. III. Arthrosia podagra.

his Commentary upon this observation of Hippocrates, tells us, that, in his time, the remark was no longer true, "owing to too much indulgence on their part in an indolent, as well as intemperate mode of life:" and the remark is confirmed by modern experience. There is a Greek epigram, literally signifying "Of limb-relaxing Bacchus, and limb-relaxing Venus, is born a daughter, the limb-relaxing Gout." And a similar doctrine is contained in the adage, "Bacchus pater, Venus mater, et Ira obstetrix Arthritidis." While, says Dr. Bateman, this fact is confirmed, on the one hand, by the testimony of ages, in the affirmative, it is corroborated also on the other hand, by observation, in the negative. Dr. Cullen remarks, that gout seldom attacks those, who are employed in bodily labour, or who live much upon vegetable aliment, or take no wine, or fermented liquors. Indeed, the gout is said to be altogether unknown, where these liquors are not used, as among the common people of Turkey. According to Van Swieten, some people, who, after being in comfortable circumstances, have been reduced to labour for their sustenance, and to exchange a luxurious table and indolence for a spare diet and activity, have never suffered from gout again. He mentions particularly the instance of a certain priest, who enjoyed a rich living, and had been an old and constant sufferer from gout, but, happening to be taken by the pirates of Barbary, he was kept constantly at work in the galleys for two years; "which had this good effect, that afterwards, when he was ransomed from captivity, having lost all his troublesome and monstrous fatness, he never once had a fit, though he lived several years after the event." Various similar examples are related by Schenckius*. In a word, as Dr. Bateman remarks, much exercise, which will often counteract the influence of intemperance, will, when combined with temperance, counteract even the hereditary disposition to the disease.

Women are not very liable to gout, probably from their more regular and abstemious mode of living; but those females whom it attacks, are generally of robust and full

* Obs. Med. Rarior. lib. v. p. 659, ed. 1644.

habits. It is said to be very rare before the cessation of menstruation, which, as Dr. Bateman thinks, only implies, that it is a disease of advanced life. For Dr. Cullen* has observed, that robust females are often attacked before the menses have ceased; and he knew of cases, where it occurred in females, whose courses were more abundant than usual†.] Gen. XII. Spec. III. Arthrosia podagra.

The podagric diathesis must be distinguished from the paroxysms to which it gives rise, and which constitute the only manifest indications of its existence. Diathesis must be distinguished from paroxysms.

The paroxysms of gout are excited by certain occasional causes, some of which are obvious, and some doubtful, or altogether unknown; but, without the co-operation of these, the gouty diathesis may remain unnoticed or quiescent in the body for years, or perhaps, through the whole term of a man's life. And hence, we often see an individual, whose ancestors have been notorious for this complaint, pass the whole of his days without betraying any marks of it, while it appears in one or more of his children, perhaps in their very boyhood. Paroxysms, how excited.

The occasional causes are very numerous; for, where the diathesis exists strongly, almost any thing that is capable of producing a general disturbance in the system, or of throwing it off the balance of ordinary health, is sufficient to become a cause; and this, whether the incitement be of an entonic or an atonic character. And hence paroxysms in different individuals are often produced by intoxication, or excess of eating; violent emotions of the mind, particularly the depressing passions, as grief and terror; sudden exposure to cold when the skin is in a state of perspiration; wet applied to the feet; great labour of the body; severe application of the mind, especially when protracted, so as to break in upon a due allowance of sleep: cold, flatulent fruits, and often acidulous liquors; a sudden change from a spare to a full, or from a full to a spare, diet; excessive evacuations of any kind; and, occasionally, a sudden cessation of such as are habitual. Occasional causes, what.

The more violent the attack of a paroxysm, and the longer its continuance, the more the diathesis is confirmed, Violent and protracted paroxysms confirm the

* First Lines, &c. § 494.

† Bateman, in Rees's Cyclopædia, art. Gout.

GEN. XII. [SPEC. III. Arthrosis podagra.

and the oftener the attack is renewed. On which account, it is of great importance to alleviate and abridge the paroxysms as much as possible, and especially when they are as yet new to the system.

diathesis, and quicken the return of fits.

Whether particular climates or countries are more disposed to favour the existence of gout than others, separate from the occasional causes just adverted to, may be doubted *. Such an opinion, however, has prevailed among the vulgar, as well as among many of the more learned in most ages. Thus, among the Greeks, it was a popular belief, that Attica was the hot-bed of gout, as Achaia was of ophthalmy; whence Lucretius,

Whether particular climates more than others disposed to produce gout.

> Atthide tentantur gressus, oculeique in Achais finibus †.
> Gout clogs the feet in Attica, the sight
> Fails in Achaia.

And thus, too, in more recent times, we are told that China ‡, and even some of the German provinces, are exempt from the attack of gout, while, in our own country, it exercises an almost irresistible sway. The last assertion is true enough; but, we are not driven to the variable nature of our climate to account for the fact.

Proximate cause variously accounted for.

Thus far we can proceed safely, respecting the general pathology of this Proteus-disease. But the moment we enter upon the field of its PROXIMATE CAUSE, we are bewildered in a hopeless labyrinth, without a thread to guide our entangled footsteps amidst the growing darkness. There has, indeed, been no want of attempts to explain the subject; but thus far, they have been attempts alone; ingenious conjectures, rather than enucleated facts. Thus some, among whom was the learned Boerhaave, resolved the proximate cause of gout into a morbid texture of the nerves and capillaries; and others, into a peculiar acrimony of the fluids; respecting the nature of which, however, those who adopted this view were never able to agree; several of them, like Hoffman, affirming it to be a tartaric salt, several, a bilious salt, several again, an acid, and several again, an alkali.

Hypothesis of Boerhaave:

of Hoffman.

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* Gout is by no means common in very hot climates. The summer in this country materially diminishes the number of cases.—Ed.

† De Rer. Nat. VI. 1117.

‡ Le Conte, Nouvelles Mémoires sur l'état present de la Chine. Paris, 1696.

GEN. XII. SPEC. III. Arthrosia podagra.

This morbid material, in whatever it consists, was supposed to be separated from the system and thrown off* during the continuance of the paroxysm, which, consequently, it became the duty of the physician to encourage. And by some pathologists it was held, that the morbid matter thus despumated has, in various instances, proved contagious, and this not to man only, but to other animals as well: thus M. Pietsch informs us, that he has known dogs affected with the same disease by licking the ulcers that have followed upon a fit of gout accompanied with chalk-stones.

Morbid matter by these writers supposed to be thrown off.

Has been said to be contagious; and even to affect dogs.

Most of these views opposed by Cullen in favour of his own.

Dr. Cullen has taken great pains in a series of nine consecutive arguments to prove the error or absurdity of most of these opinions: and then he proceeds to establish his own; which consists in regarding the proximate cause of a gouty diathesis as dependent upon a certain vigorous and plethoric state of the system; and the proximate cause of a gouty paroxysm as produced by an occasional loss of tone in the extremities, often communicated to the whole system, but especially to the stomach, succeeded by a powerful re-action in the same quarter, which constitutes the pain and inflammation, and is an effort of the vis medicatrix naturæ to restore the tone thus injured†. But, by this hypothesis, we gain as little as by any of the preceding. It is obviously a mere extension of the Cullenian doctrine of fever to the disease before us, and is chargeable with the same incongruity: for here, as in fever, the stage of strength or increased energy is made to depend upon the stage of weakness; as the weakness or loss of tone is made dependent upon a peculiar vigour and plethoric state of the system. There is, indeed, no great difficulty in conceiving how loss of tone may follow excess of energy; but by what means recovered energy is to be a result of loss of tone, is a problem of more laborious solution.

One of the marks, by which a REGULAR PAROXYSM of GOUT is said to be distinguished from that of rheumatism, is the suddenness of its onset. This is true, as Sydenham has correctly observed, with regard to the general course

a A. Podagra regularis.

Described in its course.

* Schäffer, Vers. II. p. 176, who denies it; and Degner de Dysenteriâ, who maintains it.

† Pract. of Phys. Part I. B. II. Chap. XIV. DXXXIII.

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his Commentary upon this observation of Hippocrates, tells us, that, in his time, the remark was no longer true, "owing to too much indulgence on their part in an indolent, as well as intemperate mode of life:" and the remark is confirmed by modern experience. There is a Greek epigram, literally signifying "Of limb-relaxing Bacchus, and limb-relaxing Venus, is born a daughter, the limb-relaxing Gout." And a similar doctrine is contained in the adage, "Bacchus pater, Venus mater, et Ira obstetrix Arthritidis." While, says Dr. Bateman, this fact is confirmed, on the one hand, by the testimony of ages, in the affirmative, it is corroborated also on the other hand, by observation, in the negative. Dr. Cullen remarks, that gout seldom attacks those, who are employed in bodily labour, or who live much upon vegetable aliment, or take no wine, or fermented liquors. Indeed, the gout is said to be altogether unknown, where these liquors are not used, as among the common people of Turkey. According to Van Swieten, some people, who, after being in comfortable circumstances, have been reduced to labour for their sustenance, and to exchange a luxurious table and indolence for a spare diet and activity, have never suffered from gout again. He mentions particularly the instance of a certain priest, who enjoyed a rich living, and had been an old and constant sufferer from gout, but, happening to be taken by the pirates of Barbary, he was kept constantly at work in the galleys for two years; "which had this good effect, that afterwards, when he was ransomed from captivity, having lost all his troublesome and monstrous fatness, he never once had a fit, though he lived several years after the event." Various similar examples are related by Schenckius *. In a word, as Dr. Bateman remarks, much exercise, which will often counteract the influence of intemperance, will, when combined with temperance, counteract even the hereditary disposition to the disease.

Women are not very liable to gout, probably from their more regular and abstemious mode of living; but those females whom it attacks, are generally of robust and full

* Obs. Med. Rarior. lib. v. p. 659, ed. 1644.

the attacks more frequent and of longer continuance: whence, as Dr. Cullen has justly observed, "in an advanced state of the disease, the patient is hardly ever tolerably free from it, except perhaps for two or three months in the summer." GEN. XII. SPEC. III. a A. Podagra regularis.

Nothing can be more specific, more true to itself, or more distinct from every other kind of inflammation, than that of the disease before us, when thus exhibited in a regular fit; the inflammation of erythema does not differ more from that of phlegmon than both these, and, indeed, every other, from that of gout: it never suppurates, never ulcerates when simple and genuine, however violent may be the attack, and though, to the eye of inexperience, the skin may seem to be on the point of bursting; while, in the midst of the severest pain, there is a sense of numbness, weight, and want of energy; insomuch that, if the pain could for a moment be forgotten, the limb would feel paralytic; and, though the muscles which move the limb be not affected, they raise it or drag it along like a dead load. If the inflammation run through its course where it first fixes, it subsides by a resolution that leaves no external discolouration, or internal weakness, or disability; and if it make a transfer from one extremity to another, it passes with inconceivable rapidity; the limb now affected being loaded with all the vehemence of the inflammatory action, and that lately the seat of pain being all of a sudden restored to perfect soundness. Character of the inflammation specific.

It is rarely, however, that any metastasis takes place on its first appearance in a healthy constitution; nor indeed till after various organs, or the entire habit, have been weakened by repeated assaults. We have already observed, that it is the nature of the disease to weaken the habit in this manner till the system is completely broken down. In this case, the paroxysms, though much longer and more frequent, are less violent and painful than at first; but there is no joint exempt from its incursion, nor perhaps an internal organ that does not suffer from induced weakness: so that, in the language of Sydenham, "the patient exists only to be wretched and miserable, and not at all to taste of the happiness of life." Metastasis not common in sound health: but the system weakened by fresh paroxysms.

[In the inveterate and protracted form of the disease, the joints remain not only weak and stiff after the ter-

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and the oftener the attack is renewed. On which account, it is of great importance to alleviate and abridge the paroxysms as much as possible, and especially when they are as yet new to the system.

diathesis, and quicken the return of fits.

Whether particular climates or countries are more disposed to favour the existence of gout than others, separate from the occasional causes just adverted to, may be doubted *. Such an opinion, however, has prevailed among the vulgar, as well as among many of the more learned in most ages. Thus, among the Greeks, it was a popular belief, that Attica was the hot-bed of gout, as Achaia was of ophthalmy; whence Lucretius,

Whether particular climates more than others disposed to produce gout.

> Atthide tentantur gressus, oculeique in Achæis finibus †.
> Gout clogs the feet in Attica, the sight
> Fails in Achaia.

And thus, too, in more recent times, we are told that China ‡, and even some of the German provinces, are exempt from the attack of gout, while, in our own country, it exercises an almost irresistible sway. The last assertion is true enough; but, we are not driven to the variable nature of our climate to account for the fact.

Proximate cause variously accounted for.

Thus far we can proceed safely, respecting the general pathology of this Proteus-disease. But the moment we enter upon the field of its PROXIMATE CAUSE, we are bewildered in a hopeless labyrinth, without a thread to guide our entangled footsteps amidst the growing darkness. There has, indeed, been no want of attempts to explain the subject; but thus far, they have been attempts alone; ingenious conjectures, rather than enucleated facts. Thus some, among whom was the learned Boerhaave, resolved the proximate cause of gout into a morbid texture of the nerves and capillaries; and others, into a peculiar acrimony of the fluids; respecting the nature of which, however, those who adopted this view were never able to agree; several of them, like Hoffman, affirming it to be a tartaric salt, several a bilious salt, several again, an acid, and several again, an alkali.

Hypothesis of Boerhaave:

of Hoffman.

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* Gout is by no means common in very hot climates. The summer in this country materially diminishes the number of cases.—Ed.

† De Rer. Nat. VI. 1117.

‡ Le Conte, Nouvelles Mémoires sur l'état present de la Chine. Paris, 1696.

been thrown off by the skin. I have seen, says Swediaur, an inveterate case, in which the patient, labouring under a paroxysm of several months' duration, had the entire surface of the body covered every morning with a white powder, as though he had been dusted with flour *. GEN XII. SPEC. III. β A. Podagra larvata.

Thus far we have followed up the progress of a regular attack of gout in a constitution otherwise healthy and vigorous. But the same diathesis exists in systems of delicate and infirm health, and where there is a want of sufficient energy to work up a fit of inflammation, and throw it off at its appropriate outlets. And in such case, as soon as it becomes roused into action by any of the causes of excitement already enumerated, it constitutes the SECOND VARIETY, assumes the guise of various other diseases, as dyspepsy, hysteria, hypochondrias, palpitations of the heart, vertigo, hemicrania, with several modifications of palsy or apoplexy. The stomach and bowels, however, form the chief seat of affection; the appetite is fastidious or destroyed; a spasmodic stricture or painful oppression is felt in the epigastric region, or the stomach is distended almost to bursting with flatulence; nausea, eructations, vomiting, and all the symptoms of indigestion follow, and are alternated with severe colic or costiveness. In the meanwhile, the disease shows itself, at times, in one or more of the joints, in slight and fugitive pains, as though making an ineffectual effort to kindle up a paroxysm of proper inflammation, but which there is not energy enough in the system to accomplish; whence the articular pains cease almost as soon as they appear, and the visceral derangement is renewed; sometimes slowly subsiding after a continuance of several weeks, and sometimes wearing out the entire frame, and terminating in abdominal or cellular dropsy.

Found in delicate constitutions, and why.

Under various characters; but chiefly affects the digestive organs.

Fugitive paroxysms.

It sometimes happens, however, that while the general constitution of a podagric patient is tolerably sound, one or more of the internal organs form an exception to the general rule, and are less healthy than the rest. And as upon an excitement of gouty inflammation in a gouty habit, the inflammation seizes ordinarily upon the weakest part of the body, it makes its assault upon such organ

γ A. Podagra complicata.

How produced.

* Nov. Nosol. Meth. Syst. i. p. 218.

GEN. XII. SPEC. III. a A. Podagra regularis.

of regular gout, in which the constitution is in other respects perfectly sound. But, in other cases, the fit is often preceded by certain prodromi, which those who have suffered from it before very sufficiently understand, and uniformly take as a warning; such as a coldness or numbness of the lower limbs, alternating with a sense of pricking or formication along their entire length; frequent cramps of the muscles of the legs; a crassament in the urine*; slight shiverings over the surface; languor and flatulency of the stomach; and sometimes a pain over the eyelids, or in some other organ†.

Sometimes preceded by particular signs.

Generally appears in the spring, but not always.

The paroxysm is said by Dr. Sydenham, who has drawn its picture to the life, to show itself most commonly in January or February; but I have known it occur so often towards the close of the summer, and in the autumn, and have attended so many patients who have never had it except in the latter seasons, that the rule does not seem to be in any way very well established.

Description.

The first attack is usually in one of the feet, most commonly about the ball or first joint of the great toe: it commences at night, or during the night, and there is sometimes, though not always, a slight horror, succeeded by a hot stage. The local pain and swelling increase in violence, the joint assumes a fiery redness, and the whole body is in a state of great restlessness. The symptoms remit sometimes towards the next morning, yet occasionally not till the morning after; but they still return during the night, though in a more tolerable degree, for three or four days, or even a week: when the inflammation subsides as by resolution; the foot almost instantly recovers its vigour, as though nothing had been the matter with it; and if the patient have been antecedently indisposed, he enjoys, as on recovering from an ague, an alacrity of body and mind beyond what he has experienced for a long time before; the constitutional indisposition disappearing with the paroxysm.

Return of the paroxysm at first annual or less frequent:

At the commencement of the disease, the return of it may be annual, or not oftener than once in three or four years; but it is perpetually encroaching on the constitution, so that the intervals gradually become shorter, and

afterwards the intervals much shorter,

* Butler, Nadere out dekkinge der menschelyke Waters. Harlem. 1697.

† Eph. Nat. Cur. Dec. I. Ann. III. Obs. 252.

digestion. On the other hand, inflammatory disorders of the lungs and other viscera, congestions in the head, inducing head-ache, somnolency, vertigo, &c. and ultimately various degrees of paralytic and apoplectic disease, not essentially different, in any respect, from the same affections in habits free from a gouty diathesis, have probably been suffered to go on, and to prove fatal, under the notion that they were gouty, and the proper remedies have been therefore neglected *.]

GEN. XII. SPEC. III. γ A. Podagra complicata.

In applying the art of medicine to the cure or alleviation of gout, our attention must be directed to the state of the patient during the paroxysms, and during their intervals; and particularly to the state of his constitution or previous habits, which, according to their character, may demand a different and even an opposite mode of management.

Indications of cure applicable to the paroxysms, and to the intervals.

Let us commence with the PAROXYSMAL TREATMENT: and, first of all, with that of the inflammatory attack, as it shows itself in a regular fit of the disease.

Treatment during the paroxysms.

It was formerly the belief, as we have already seen, that a gouty paroxysm was an effect of nature to throw off from the constitution, and thereby restore it to a state of perfect health, some peccant matter forming the proximate cause of the distemper; and it was hence also conceived, in addition, to adopt the language of Sydenham, that the more vehement the fit, the sooner it would be over, and the longer and more perfect the intermission. And, in this view of the subject, there can be no question, that the wisest plan must have been that of leaving the paroxysm to run through its regular course without interruption. Yet, as this hypothesis has long fallen into discredit, we are not in the present day prevented, on such ground, from endeavouring to subdue the inflammation of a gouty paroxysm by the ordinary means resorted to in inflammations of any other kind, as bleeding, purgatives, sudorifics, local astringents, and even refrigerants. But a very general objection has since been taken to this plan on another ground; and that is, the great danger of repelling the disease to some internal organ of more im-

During the paroxysm of a regular fit.

How far the ordinary means used in entonic inflammations may apply.

Objection from supposed danger of repulsion:

* See Bateman in Rees's Cyclopædia, art. GOUT.

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mination of the fit, but they become at length so contracted and disabled, that, although the patient can stand, and perhaps walk a little, yet it is very slowly, and with great lameness and difficulty. In many persons, though not in all, this immobility of the joints is further increased by the formation of concretions of a chalky appearance on the outside of them, and for the most part immediately under the skin. The secretion, or deposition of this matter is characteristic of the disease, being the consequence of gouty inflammation alone. It seems to be deposited at first in a fluid form, but afterwards becomes dry and firm; in which state the concretions have the appearance of a friable earthy substance, and have been erroneously called *chalk-stones*. By the investigations of Dr. Wollaston, however, it has been ascertained, that they contain no calcareous or earthy matter; but consist of lithic or uric acid combined with soda, forming what the chemists term the lithate or urate of soda. These concretions occur principally about the joints of the toes and fingers in little nodules, which Sydenham compares to crabs' eyes; but sometimes they appear about the larger joints, where they occasion a whitish swelling almost as large as an egg, which becomes gradually inflamed and red. There is an instance of a very large concretion of this nature, recorded in the surgical works of Sir E. Home. But perhaps the most curious case is that related by Mr. Watson: the patient, who was a martyr to gout, had so extensive a deposition of urate of soda, that the concretions not only enveloped the joints of his great toes, formed tumours on his legs, and rendered the synovia of the large joints as thick as cream, but "the joints of the fingers were swelled and knotty, every knot being a lump of chalk; and I was told (says Mr. Watson) that, when he played at cards, he used frequently to score up the game with his knuckles*." It is singular, that our author, with his very extensive information on all subjects connected with medical science, should have fallen into the error of describing gout-concretions as really composed of lime.]

Gout-concretions, or chalk-stones, as they are wrongly called.

Urate of soda thrown off by the skin.

It seems probable, that urate of soda has sometimes

* See Medical Communications, vol. i. art. 3.

possible to draw a definite line between the form of the disease in which it ought to operate, and that in which it ought not? and whether in the latter case we may not derive all the benefit from a full use of a reducing process, which is obtained in other inflammations accompanied with a like degree of constitutional vigour?

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reducing process may not sometimes be used safely.

From the history of this disease, as it has already passed before us, we may draw this general corollary: that the specific inflammation of gout, or whatever other morbid character it may evince, when once excited by some occasional cause into action, has a peculiar tendency to fix and expand itself upon the weakest parts of the system, and, where several parts are equally weak, to pass in sudden transitions from one part to another, though transitions are rare where the system is sound.

General character and tendency of the disease.

In healthy constitutions, the weakest parts are the extremities; and hence, in such constitutions, these are the parts, as we have already seen, in which the gout uniformly opens its assault. Here it commences, and here it runs through its course, seldom migrating, or, when it does migrate, only passing from one extremity to another; as from foot to foot, or one of the feet to one of the hands; and limiting itself to these quarters, because they are the weakest parts of the system.

In healthy constitutions, the weakest parts are the extremities.

In unhealthy habits, however, the extremities are not the weakest parts of the system, but perhaps the stomach, or the heart, or the head, or the lungs, or some other organ; while several of these organs may, moreover, be equally debilitated, according to the idiosyncrasy, or to accidental circumstances. And, true to the general rule, we see the gouty principle, when roused into action in habits of this kind, fixing itself from the first on one of those important viscera, rather than on the extremities; or roaming from one to another, on its alternating its course from these organs to the extremities, or from the extremities to these organs. And as metastases are rare where the system is sound, they become frequent in proportion as it loses this character, and especially in proportion to its debility in particular parts.

In unhealthy habits other parts.

Hence sometimes the extremities, and sometimes other parts, the seat of paroxysm.

These are rules which we cannot too closely study and commit to memory, and they seem to point out to us the line of distinction between that form of the disease in which

And hence a distinct line of treatment pointed out,

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we ought to entertain a prudent fear of revulsion, and that in which we may safely act without any such fear whatever. They directly lead us to two states of constitution that require a very different, and in many instances a very opposite mode of treatment; and seem to settle the important question before us, under what circumstances it may be expedient to employ a palliative plan, and under what a cooling and reductive.

Treatment of gout during the paroxysms often perfectly opposite.

In sound constitutions no danger of metastases; and hence evacuants and refrigerants may be employed.

Let us commence with the first of these two states, forming a regular but violent fit of gout as it shows itself in a sound constitution, and inflicts its torture on the hand or the foot. Guiding ourselves by the laws just laid down, there seems no reason why, instead of "committing the person to patience and flannel alone," we should not pursue the evacuating and refrigerent means employed in entonic inflammations of any other kind, and have cause to expect a like success; such as bleeding, so strongly recommended by Dr. Heberden, and allowed occasionally by Sydenham, and emptying the bowels, relaxing the skin generally, and cooling the fiery heat of the affected limb by cold water or any other frigorific application. With a transfer of morbific matter we have now no longer to contend. Yet, even where such a cause is admitted, as in most exanthems, the plan thus proposed is, in many instances, pursued without hesitation. Thus, in measles, cathartics and venesection are not only in general use, but often indispensable; in the height of malignant scarlet-fever, we sponge or wash the entire surface of the body with cold water; and in small-pox, not only purge freely, but expose the patient to the coldest atmosphere of the winter season.

Illustrated by the treatment of exanthems.

In weakly habits metastasis is common; and hence the same treatment highly mischievous.

In weakly habits, or idiosyncrasies, or incidental debilities of particular organs, we have admitted that a metastasis, as we have already seen, is a frequent result, and peculiarly marks the character of gouty inflammation; and here, indeed, refrigerants, violent purgatives, and venesection ought to be most sedulously abstained from; and, not unfrequently, the best practice we can adopt is that of "committing the person to patience and flannel alone." But what I am anxious to establish is, that, agreeably to the laws which regulate the progress of gout, a metastasis in sound and vigorous constitutions is rarely to be expected, and perhaps never takes place, except from one extremity

to another. In order that some internal organ may become the seat of transferred gout, it is necessary that it should possess a weaker action, than the part from which the inflammation is to be transferred: but the parts of weakest action in a sound and vigorous constitution are the extremities themselves; and it is probably because the living energy is, in all the extremities, upon a balance, that in a sound frame a metastasis, even from one extremity to another, is a rare occurrence.

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[In the foregoing argument, the doctrine, that the weakness or weak action of any part, is what disposes it to be affected by a metastasis of gout, is only asserted, and by no means proved. The abundance of fibrous and ligamentous structures about the foot and hand may seem to many pathologists a better reason for these parts being so disposed to gouty inflammation, than the hypothesis of weakness.]

As far as I have seen, the inflammation of a regular fit of gout subsides gradually, though rapidly, under the treatment now proposed, without any repulsion whatever. In a few instances, during the use of a cold pediluvium, or shortly afterwards, I have known patients speak of a peculiar kind of *aura* creeping over them and through them, and exciting an undefinable sense of glowing which has lasted for a few minutes, without any inconvenience at the time, or even any change in the pulse; and certainly without any ill effect afterwards.

Peculiar glow sometimes felt over the body on the repulsion of gout.

But, it may be replied, there is no resisting facts. The cases are innumerable in which great mischief has resulted from the depleting and the refrigerant plan; and, as we cannot always tell, that all the internal organs are or are not in a state of sound health, it is most prudent to abstain from a practice, which may prove highly injurious in case of a mistake.

Advertency to facts proving the proposed plan injurious.

The answer to this remark is, that here, as well as in every other disease, professional judgment is to be called into exercise, and the practitioner is to draw largely upon that skill and discrimination, which it was the object of his education to bestow upon him: and thus bestirring himself, he will rarely fall into an error. That mischief has resulted, and frequently from the use of the plan before us, cannot be denied by any one; but that great and essential

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it has descended in a stream of recommendations from Zacutus Lusitanus* in 1641, to Kolhaas† and Keck‡ in 1788 and 1789. Bartholin speaks of the use of snow as a common application in 1661§, and Pechlin both of snow and cold sea-water towards the close of the same century‖.

Treatment of gout during the paroxysms.

But this treatment, I am ready to admit, has often been employed rashly, and sometimes with great and even fatal mischief. It ought never to be ventured upon except, as already stated, where the constitution is decidedly sound and vigorous; for though I subscribe to much of Dr. Kinglake's therapeutic plan, I cannot agree with him, that a gouty paroxysm is a merely local affection. The treatment before us should be limited to those who are in full vigour, and perhaps entony of health; and is especially to be avoided where the stomach is dyspeptic, the lungs asthmatic, the heart subject to palpitation, the head to nervous pains or drowsiness; or where there is any known disability in any other important organ.

Has been employed rashly and fatally.

Hence the necessity of attending to the line pointed out.

Yet even here we need not, I think, condemn the sufferer to the torture till cured by patience and flannel; for it will often be in our power at least to palliate his pain, and not unfrequently to expedite his cure, without any risk whatever of affecting his general state of health. Leeches may, in many instances, be applied where venesection would be of doubtful expediency; a liniment of oil of almonds impregnated with opium, rubbed on the tumefaction with a protracted and very gentle friction, I have often found highly serviceable in mitigating the pain; and epithems of tepid water, as recommended by Dr. Scudamore, alone or mixed with a portion of ether or alcohol, formed by cloths wetted with the fluid, and applied to the inflamed part, renewable as they become dry, in many cases prove a grateful substitute for cold water; and are preferable to poultices, warm water, or even vapour-baths, which too generally relax and weaken the joint, and prevent it from recovering its elasticity, after the paroxysm is over, so soon as it otherwise would do.

Treatment of regular fit when a different plan is called for.

Local applications.

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* De Medicorum Princip. Historiâ, Lib. III. Amsterd. 1641.

† Baldinger, Neuer, Mag. band v. p. 521. 1788.

‡ Abhandlungen und Beobachtungen. Berl. 1789.

§ De Usû Nivis medico, 1661, 8vo.

‖ Observ. Physico-Med. Hamb. 1691. 4to.

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good, and an easy and rapid cure, have been also in hundreds of instances effected, must be admitted as readily. No clear distinctive line, however, has hitherto, so far as I am acquainted with, been acted upon, or even laid down; and hence it is rather to be ascribed to a want of discrimination upon this subject, that the evils adverted to are chargeable, than to any mischief in the plan itself. Yet it may be doubted, whether the injury, produced even by an injudicious use of evacuants and refrigerants, amounts to a thousandth part of that entailed on the constitution by allowing the gout to make its inroads tacitly and unresisted; till by degrees it triumphs equally over all the powers, as well of the body as of the mind, and, in the forcible language of Sydenham, "The miserable wretch is at length so happy as to die."

Treatment of gout during the paroxysms.

Yet highly and essentially beneficial in numerous cases.

Hence a call for proper discrimination.

Benefit exemplified in the author's own person.

Of the benefit produced by the external use of cold water, the author can speak from a trial of several years formerly upon his own person, and is only anxious that others should participate in what has proved so decisive a comfort to himself. It is his duty to state, however, that, apparently owing to too much exertion of mind in the composition of this work, the gout has since appeared, accompanied with a more irritable state of the general frame, than had hitherto been manifested. On this last occasion, therefore, he did not venture upon the cold bath, but confined himself chiefly to the wine of colchicum, with, very frequently, a full dose of magnesia; and, by this simple plan alone, he has again been able to obtain a restoration of health, and the full enjoyment of foot-exercise.

Return of paroxysm.

The practice not of modern invention,

whether in respect to evacuants

or refrigerants.

Yet the bolder practice before us is by no means of modern invention, however it may have become a subject of warm controversy in the present day. An active evacuant plan, both by venesection and purging, has never ceased to be in use among many practitioners, and is particularly alluded to by Sydenham, though with a view of entering his protest against it, as injurious to a free discharge of the peccant matter, which, in his opinion, required to be carried off; while, with respect to the external use of cold water, not to mention that it seems to be alluded to by several of the Greek writers, and especially by Hippocrates *,

* Aphor. Sect. v. p. 25

a generous diet, and, above all things, to take off the severe suffering, in whatever it may consist, from the affected organ; for the longer the fit continues there, the weaker the organ will become, and the less capable of any instinctive remedial exertion. At the same time, we may solicit the paroxysm to the extremities by putting the feet into warm water.

Gen. XII. Spec. III. Arthrosia podagra. Treatment of gout during the paroxysms. Pedilu-vium.

In atonic gout, the sufferings, though widely different, according to the seat of the disease, are almost insupportable. In the head the pain is maddening, or the disorder is accompanied with great horror, or mimics the stupor of an apoplexy: in the stomach, there is a faintness like that of death, with the sense of a cold lump of lead lodged within it; or there is a gnawing or a burning agony, or a spasmodic stricture which cuts the body in two, and renders breathing almost impossible; often also accompanied with a rapid and sinking palpitation of the heart.

Sufferings in this variety often insupportable.

It is of importance, before we proceed, to determine accurately that these anomalous symptoms are really those of gout; of which we have chiefly to judge from the general character of the patient's constitution, his hereditary predisposition, habits of life, and the ailments to which he has been previously subject. In most cases, during the paroxysm, and especially where the stomach is affected, the warmest cordials are necessary, as brandy, the aromatic spirit of ammonia, the tincture of ginger or of capsicum; or, what is still better, usquebaugh. And it is always advantageous, and especially where the bowels are confined, to add to it some warm aperient, as aloes or rhubarb. Most of our family gout cordials are made upon this principle, and judiciously consist of some active aperient, and the hottest aromatics dissolved in ardent spirits. And the patient, who is subject to these attacks, should never be without having something of this kind at hand, since the paroxysm often makes its onset without any warning. Yet he should resolutely forbear having recourse to any such medicine except in the time of necessity; for an habitual indulgence in any of them will still farther debilitate the affected organ, and indeed the entire system; and hence quicken the returns of the paroxysm, and render the stimulant antidote less availing. The best aperient, and at the same time stimulant medicine that I know of for this

How to determine that the anomalous symptoms are really from gout. Stimulant cordials, made aperients. Some such cordial should be always at hand. Essential oil of turpentine.

GEN. XII. SPEC. III. Arthrosia podagra.

At the same time, the body should be cooled with gentle aperients or injections; and while drenching sweats are avoided, which never fail to be injurious, the breathing moisture or diapnoë should be imitated, which often breaks forth naturally in an early part of the morning, and is sure to afford relief after a night of distraction. Nor should opium be omitted where the pain is very acute; for, while it affords temporary ease, it diminishes the duration as well as the violence of the paroxysm. Dr. Cullen, in his Practice of Physic, seems disposed to postpone the use of this medicine till the paroxysms have abated in their violence; for, when given in the beginning of gouty paroxysms, he asserts that it occasions the fits to return with additional fury. Yet it should never be forgotten, that it is a law in the history of gout, and one to which we have already adverted, that the frequency and vehemence of the ensuing paroxysms are measured by the violence of those that have preceded.

Treatment of gout during the paroxysms.

Gentle aperients.

Breathing perspiration.

Opium.

Regimen.

In the mean time, the regimen should be light and inirritant, and the diet below the standard to which the patient has been accustomed; though to guard against a metastasis to the stomach, we must be cautious that we do not reduce it too much. His beverage should be cool and unstimulant: Sydenham allows him sound table beer, and, if he have been accustomed to stronger malt liquors, such a drink may be conceded to him. His chamber should be well ventilated, and his dress light and easy.

Treatment in the second and third varieties.

In the two ensuing varieties, constituting atonic and retrocedent gout, we have a podagric diathesis grafted upon an unsound frame; the unsoundness being general or local: and, however fearless we may be of the disease fixing on any internal organ in the preceding variety, we have here a constant apprehension, that it may do so, and, in many cases, see it commence in such organs.

Curative intention in atonic gout: in retrocedent.

In atonic gout, our uniform attempt should be to produce a transfer from the part on which it has seized, and fix it in the extremities: in retrocedent gout, on the contrary, to render the vacillating attack on the extremities more permanent, and prevent it from shifting to any other quarter.

The first obtained by tonics and a generous *diet.*

To obtain the first intention, we have to strengthen and even stimulate the system generally by warm tonics and

repeat or increase the quantity to a large amount with perfect safety. "In a case of the gout in the stomach," says Dr. Cullen, "I have by degrees gone on to the dose of ten grains twice a day; and when the disease was overcome, the dose of opium was gradually diminished, till in the course of two or three weeks it was none at all: and in all this no harm appeared to be done to the system. We frequently find that when a strong irritation is to be overcome, very large doses may be given without procuring sleep, or showing any of those deleterious effects that in other cases appear from much smaller quantities. All this appears from the practice now well known in tetanus, mania, small-pox, gout, and syphilis*."

GEN. XII. SPEC. III. Arthrosia podagra. Treatment of gout during the paroxysms. Exemplified.

In retrocedent gout, the same plan is to be pursued where the attack has actually shifted from the feet or hands to some internal organ. But where it still lingers in the extremities, though with slight pain and inflammation and frequent cessations, as though it were on the point of removal, we should increase the morbid action by local irritants applied to the joint, as camphor, ammonia, blisters, sinapisms, or the moxa; and at the same time prescribe a light, but generous diet, with rather more wine than the patient is in the usual habit of taking; carefully avoiding all violent cathartics, and keeping the bowels moderately open with rhubarb, aloes, or the compound colocynth pill.

Remedial process in retrocedent gout. Local action when lingering in the extremities to be augmented by local irritants: light but generous diet: mild aperients.

In gout, however, the INTERVALS OF THE DISEASE are of as much importance to be attended to as its paroxysms: and here, also, the mode of management under the first form should differ essentially from that under the second: for, though the occasional causes may in many cases be the same, they have in the former to operate upon a vigorous, perhaps upon an entonic scale of power, and in the latter upon a scale decidedly reduced and atonic.

Treatment during the intervals of gout.

In every variety, all known occasional causes must be equally avoided. Where the diet has been too rich, it must be lowered, and where too spare and abstemious, made more liberal. Indolence and a sedentary life must give way to regular exercise; and over-exertion of body or mind to repose and quiet. In the young, robust, and corpulent, whether the disease result from too great indulgence at the

Occasional causes to be avoided.

* Mat. Med. Part ii. ch. vi.

GEN. XII. SPEC. III. Arthrosia podagra.

purpose, is the essential oil of turpentine; which, as uniting the powers of an active cathartic and a camphorate cordial, gives us all the qualities we are looking for. I do not know, that this valuable medicine has ever yet been brought into general practice in any form of gout; but I may venture to predict, that those, who try it in the modification before us, will seldom have to repent of their experiment. The dose should be about six drachms swallowed unmixed.

Treatment of gout during the paroxysms.

Etherial preparations.

Most of the preparations of ether, contained in the current Pharmacopœia of the London College, may be employed with benefit in the variety before us, and particularly in that icy coldness of the stomach, accompanied with a numbness of the limbs and a rapid palpitation of the heart, under which it occasionally exhibits itself. Phosphorus itself has sometimes been ventured upon, in this case, in the proportion of two or three grains to a dose, dissolved in double the proportion of ether; but I have never employed it, and cannot speak of its good effects. Musk seems, in many instances, to have been of decided advantage, if given in sufficient doses, as well in gouty affections of the head as of the stomach. The case, related by Mr. James Pringle, is strikingly in its favour *, and seems to have induced Dr. Cullen to make trial of it in similar instances, who found it produce sudden relief by free doses repeated after short intervals; and this where the lungs, as well as the head and stomach, were the seat of transferred disease †.

Phosphorus.

Musk.

External irritants.

External irritants may also be beneficially employed at the same time, and particularly those of rapid action, as the compound camphor liniment, sinapisms, and the burning of moxa, or coarse flax as recommended by Hippocrates: at the same time the extremities, as already advised, should be plunged in the warm bath.

Opium internally as a sheet-anchor: in large doses.

But our sheet-anchor is opium; and it should be given freely, and in union with some preparation of antimony, so as to act towards the surface generally, and thus restore to the living power its interrupted equilibrium. Small doses of opium will here be of no avail; and we may generally

* Physical and Literary Essays, vol. ii. art. XII.
† Mat. Med. Part. II. ch. viii.

ployed with little change from the time of Galen and Cœlius Aurelianus in the second century, to that of Sydenham in the seventeenth. The famous powder, purchased by the second Duke of Portland, who distributed its receipt for general use, from the service it appeared to have rendered him, is formed for the most part of the very same ingredients, modified either from the Greek writers, Cœlius Aurelianus and Ætius, or from Dr. Sydenham's prescription; though it is a simplification of the latter, by omitting several of the articles that enter into his composition, one or two of which had better be retained. In this reduced form, it consists of equal parts of the five following materials, finely powdered and intimately commixed: birthwort, gentian, germander, ground-pine, and the tops and leaves of the lesser centaury. The dose is a drachm taken fasting every morning for three months; after which it is to be reduced to three quarters of a drachm for three months longer; then to half a drachm for the remainder of the year; and after this, the same dose is to be continued, every other morning only, through the next twelve months: by which time it is presumed, that a cure will be accomplished.

GEN. XII. SPEC. III. Arthrosia podagra. Treatment during the intervals of gout. from Galen to Sydenham. Portland powder: Its composition.

The real effect of this and similar medicines is very doubtful, and the doubt arises from the gradual mischief which a gouty diathesis has a tendency to produce in the corporeal system; and the benefit, which the exact and abstemious regimen that is prescribed during the use of the Portland or any other course of bitter tonics, is calculated to afford of its own accord. In some instances, such medicines seem to have produced little or no effect of any kind; in others, the joint result of remedy and regimen seems to have been highly salutary; while in others again, the patients, though freed from open and decided fits of the gout, appear to have sunk gradually under complaints more distressing and fatal than the gout itself, as dyspepsy, lowness of spirits, and dropsies of almost every part, especially hydrothorax, ascites, and anasarca.

Real effects of such medicines doubtful, from various causes. When mischief has followed the disease may have produced it:

Now, it is possible, that the regimen alone may have produced the good, where good has been experienced, and the gouty diathesis the evil, where evil has followed; or that the bitter tonics themselves may have done both, according as the individual to whom they have been ad-

where good has followed, the regimen alone may have produced it: or the bitters

GEN. XII. SPEC. III. Arthrosia podagra.

table, or an habitual taint, it may be requisite to abstain from animal food, wines, and fermented liquors, altogether; but where the sufferer has passed considerably beyond the zenith of life, and the luxuries of the table have become habitual, his ordinary fare should be reduced or diminished, rather than entirely commuted. And, in every change, it is better to proceed slowly, than to rush rapidly from one extreme to another: since nothing has so great a tendency to prepare the internal organs for gouty paroxysms, as such sudden and violent transitions. The bowels should be kept in regular order, and the hour of rest be early.

Treatment during the intervals of gout.

Changes in established habits to be made slowly.

A due and unswerving attention to these general rules of the hygiene will often be sufficient to keep those free from all disturbance of the gout for many years, and perhaps for the whole of their subsequent life, who have only known it in the form of a few regular paroxysms. But where the system, and especially the digestive function, are weak, and the patient has had anticipations of atonic or recedent gout, or has actually suffered from its assaults, it will be necessary to superadd a course of INVIGORATING MEDICINES.

General rules of regimen sufficient where the general health is good: but not so in delicate habits subject to the two last varieties.

There are three classes of remedies that generally pass under this name, stimulants, bitters, and astringents. The first increase the action, the two last augment the tone. Stimulants can rarely be employed alone, except in cases of emergency; for a lax state of fibres will bear little increase of action, without, at the same time, suffering an equal increase of debility. But they may often, and in the case of gout perhaps always, be combined with astringents and bitters with great and decisive benefit. Upon this subject, however, I have already treated so largely under LIMOSIS DYSPEPSIA, or INDIGESTION *, that it is only necessary to refer the reader to that part of the work for the present purpose.

Remedies in delicate habits subject to atonic gout. Stimulants.

Astringents and bitters.

Most of the celebrated specifics for preventing a return of gout, have been formed of these classes of medicines in combination, and especially of bitters and aromatics; and it is singular that, although the variety of them, which nature offers to us, is almost infinite, they have been em-

Popular specifics for preventing gout formed of these;

* Vol. i. Class 1. Ord. 1. Gen. v. Spec. 7.

what are called nervous complaints, with lowness of spirits. In every one of them, before a year had passed, after finishing the course of the powders, some hydropic symptoms appeared, which, gradually increasing in the form of an ascites or hydrothorax, especially the latter joined with anasarca, in less than two or at most three years, proved fatal*."

GEN. XII. SPEC. III. Arthrosia podagra. Treatment during the intervals of gout.

As Dr. Cullen gives us no account of any mischief that has followed the use of bitter tonics in constitutions marked by general debility and atonic gout, the evils he has described seem, on his own evidence, to be limited to those whom we have already cautioned against the employment of such a course. No proper classification or line of distinction seems to have been drawn or adhered to; which would probably have presented us with very different results if it had been; and have superseded the clashing and unsatisfactory explanation of atonic effects, uniformly produced by a continuance of tonic medicines.

But such instances prove the contrary when nicely examined.

The subject, however, requires to be further examined by a more accurate classification of gouty patients who may be put under the influence of medicines of this kind; and I throw out the hint for this purpose. Yet, that a persevering course in bitter tonics does not uniformly prove in any way injurious to those who engage in it, is I think demonstrable from the daily use of table-beer in almost every family throughout the country, and its appearing to be one of the wholesomest beverages we can adopt. Dr. Darwin, indeed, ventures to ascribe part of the mischief produced by highly-spirited malt liquors to some noxious quality in the hops they contain; but the stronger and headier malt liquors are uniformly prepared with a much smaller proportion of hops than the weaker, and especially than those which go under the name of table-beer. For the only point aimed at by the employment of hops, is to prevent an acetous fermentation; which is effectually guarded against by the larger proportion of spirit contained in ale and strong beer; but which every one knows would soon take place in table-beer if it were not powerfully impregnated with this grateful bitter. And hence

The subject requires further examination. That bitters are not universally injurious evidenced from the use of hop in table-beer.

* Mat. Med. Part II. ch. ii.

GEN. XII. SPEC. III. Arthrosia podagra.

ministered has been in a proper or improper state of body for a trial of them. They are not to be used indiscriminately: for while the relaxed and debilitated, those who are subject to atonic and retrocedent gout, may have recourse to them with great advantage, they will be sure to prove injurious to those of high entonic health, and who are distinguished by attacks of gout in regular but vehement paroxysms.

Treatment during the intervals of gout.

alone, according to the state of the body.

Some bitters, even among those in common use, may possess more of the sedative and narcotic principle than others; and where this is the case, though such may be be fittest for employment in the first instance, they ought to be dropped for others of a different kind, as orange-peel, bark, columbo, and serpentaria, as soon as all local irritation has ceased. The strongest bitter we are acquainted with is the *nux vomica*, and the narcotic quality of this is known to every one. Opium possesses it in a still higher degree. It has of late been suspected to exist in wormwood, and been distinctly traced in the hop and some of the lettuce tribe.

Hence great caution necessary.

Some bitters more narcotic than others.

All bitters alike in this respect, according to Cullen.

Dr. Cullen, however, has taken a different view of this subject. He supposes all bitters to possess a deleterious quality of some kind or other; and that in all gouty persons they have a power of warding off fits of this disease; but that, from this deleterious property, when long persevered in, they weaken the stomach and other organs of digestion, to which at first they gave tone; and thus ultimately induce the diseases we have just noticed, and which are too apt to follow upon a debility of these viscera. And, in proof of this opinion, he tells us of the fate of nine or ten persons who had been liable for some years before to have "*a fit of a regular or very painful inflammatory gout*, once, at least, and frequently twice, in the course of a year; but who, after they had taken the Portland powder for some time, were quite free from any fit of inflammatory gout;" and, having completed the course prescribed, "had never a regular fit, nor any inflammation of the extremities, for the rest of their life. In no instance, however, continues Dr. Cullen, "that I have known, was the health of these persons tolerably entire. Soon after finishing the course of their medicine, they became valetudinary in different shapes, and particularly were much affected with dyspeptic, and

And hence injurious to all patients.

Instances appealed to in proof of this.

about seven hours; from sixty drops, in eleven; but a hundred and sixty drops, thrown into the jugular vein, killed him, after having suffered great agony, in five hours. On opening him, the stomach, smaller intestines, and colon were highly inflamed *. And it is hence obvious, that this medicine, like many other emetics and cathartics, acts rather upon the stomach, through the medium of the circulation, than on the system through the medium of the stomach. It is possible that the colchicum may act by a specific power on the peculiar inflammation of a regular fit; yet as other intestinal irritants have occasionally produced a like effect, and particularly the *gratiola officinalis* (hedge-hyssop), and *ranunculus flammula*, the disappearance of the paroxysm may also be ascribed to a transfer of action to the stomach and intestines. Generally speaking, specifics operate by a secret and inexplicable power, as the bark in intermittents, the vaccine virus in shielding the constitution against small-pox, and mercury in syphilis; for though a ptyalism gives proof, that the system is impregnated with the last, there are few practitioners so attached to the Cullenian doctrine in the present day as to contend, that the venereal virus is carried off by the salivation, since we are perpetually beholding it carried off under the influence of mercury without any salivation whatever.

Treatment of gout by reputed specifics.

Whether it acts by a specific power.

Yet, admitting that the colchicum has a specific power over a regular inflammatory paroxysm of gout, it is clear that it has no such power over the gouty diathesis, since the paroxysm has never been so removed as not to return again. And it hence becomes a serious question, whether the mischief, produced in the constitution by the employment of so active a medicine in the large doses recommended by some practitioners, be not greater than the temporary good obtained by the suppression of the inflammation? and I do not think, that either the Eau médicinale or the colchicum wine have been noticed with a sufficient degree of discrimination fairly to determine this point.

If a specific power over the paroxysm, such medicines have none over the diathesis: and hence may be of temporary use, at a great expense of the constitution.

From the rapidity and force of the operation, it is clear

More discriminate trials required.

* Phil. Trans. 1816. art. xii. xiii.

GEN. XII. SPEC. III. Arthrosia podagra.

the remark of Dr. Darwin seems to have no foundation whatever, since the stronger bitter affords a beverage proverbially wholesome; while the weak bitter is that which proves injurious.

Treatment of gout by reputed specifics.

There have also, in all ages, been offered to the public specifics for the sudden cure or removal of the paroxysm when present, as well as for preventing its return hereafter.

Specifics for a sudden cure of the paroxysm. Such from the time of the Greeks: and many of them the same to the present day.

Lucian, in his Tragopodagra, gives us with great humour, a list, that occupies a page, of such as were chiefly in vogue in his day; and the catalogue is certainly not diminished in our own. Those that have acquired the highest reputation appear to have been composed of some species of hellebore, or of meadow-saffron; the first of which is among the remedies quoted by Lucian; though it is probable that the ῥίζαν ΕΛΛΕΒΟΡΟΥ of the Greeks was a different plant from either the white or black hellebore of modern dispensatories.

Hellebore. Meadow-saffron.

Husson's Eau médicinale; Vinum-colchici.

The favourite specifics of the present day are M. Husson's Eau médicinale, and the vinum colchici, or wine of meadow-saffron, introduced into the current Pharmacopœia of the London College, chiefly upon the authority and recommendation of Sir Everard Home. The exact components of the former are kept a secret; though its basis is well known to be either the one or the other of the above plants, most probably the meadow-saffron. The effects of the Eau médicinale and of the colchicum wine do not essentially differ; for, after taking about sixty drops of either, the pulse becomes slower, and at length sinks, in about twelve hours, from ten to twenty strokes in a minute below its natural number, at which time the inflammation subsides. The action of both medicines is accompanied with great languor and a deadly nausea or sickness, which terminates in vomiting, or a discharge from the bowels, or both. If the dose be in a small degree in excess, the symptoms are syncope, cold sweat, extreme prostration of strength, violent vomiting and purging, a wiry and almost imperceptible pulse, or a state of utter and very alarming insensibility. And, in some constitutions, these effects have followed from the use of even a common dose.

Effects alike, probably from like components.

Trials of colchicum-wine by Sir Everard Home.

Sir Everard Home made several trials of the colchicum wine on a dog, both by the stomach and by infusing it into his jugular vein. From thirty drops he recovered in

other gout-medicines of the day in procuring summary relief in the first instance, at the expense of more frequent visits of the disorder, till at length it is constantly present, and in some form or other proves fatal. The inflammation, here, is probably cured before the morbid matter can be thrown off; which, therefore, shortly renews its attack, while the powers of the constitution generally give way under this unsuccessful conflict: for it does not appear how the cure of inflammation, abstractedly considered, can be too rapid, if effected with safety to the organization*." It hence follows, as already observed, that our great object in the employment of these medicines should be to moderate the inflammation, without trenching on the strength of the constitution.

GEN. XII. SPEC. III. Arthrosia podagra. Treatment of gout by reputed specifics.

The subject must not be quitted without a brief glance at Dr. Balfour's proposed mode of treatment, which consists in the use of compression and percussion alternately applied to the inflamed gouty joint; as they are applied in like manner to parts labouring under acute rheumatism or any other kind of inflammation. The operator is directed to seize the aching foot forcibly, by grasping the ball of the toe in his right hand, and gradually to increase the pressure, and continue it till the impetus of the vessels has yielded to the greater impetus of the hand: only occasionally letting go his grasp for the purpose of interposing a discipline of *gentle* percussion, as it is called.

Plan of compression and percussion.

This plan I have never tried, for I have never been able to summon fortitude enough to propose the addition of a remedial torture to that already endured from the disease; nor do I think I have ever attended a patient who would have consented to the advice if I had given it. The direct object is to overcome the inflammatory action by constringing the vessels; but this effect is more readily obtained, and in a far easier way, and with quite as little risk, by cold water. Where, however, the inflammation has subsided and weakness alone remains, and an inability to use the limb without pain, I have at times found the support of a compressing bandage produce considerable comfort.

Never tried by the author.

* On the Principles of Inflammation and Fever. 8vo. 1822.

GEN. XII. SPEC. III. Arthrosia podagra.

that they ought never to be tried, or, never without the utmost caution, except in the first variety of gout, or where the system is firm and healthy, and the disorder shows itself in a regular fit. And as it is highly desirable, for reasons already stated, to restrain the violence of the paroxysm, shorten its duration, and carry it off as soon as possible, the use of the one or the other of these medicines may be judicious, so long as the system is able to recover itself with speed from their influence, and provided the patient limits himself to the smallest dose that will answer the purpose.

Treatment of gout by reputed specifics.

But ought never to be tried except in entonic gout.

Yet these medicines, from too little attention to their real effects, and from a mistaken idea, that they are equally a specific for gout under every form, have not often been confined to the entonic variety, nor employed with sufficient discrimination in the second and third varieties of the disorder, in which the system, and particularly the digestive organs, are in a state of chronic debility; and the inflammatory fit, when it shows itself in the hands or feet, is incomplete and evanescent. In all such cases, such medicines, without the superintendence of much practical caution and judgment, cannot fail to do serious injury to the constitution. They have a tendency to increase the ventricular weakness, and hereby to leave the system more open to all the miseries, which gout is so perpetually entailing. And hence the reason of the very general complaint among those who have tried these remedies, that, although they remove the fit at the time, they shorten the intervals, and render their frames more obnoxious to relapses. In my own person, I have never exceeded forty drops of the colchicum wine, prepared after the form of the royal college; and I have seldom failed to find this serviceable, though I cannot affirm that it has been uniformly so.

Have been often tried improperly;

and hence made productive of serious injury.

The remarks of Dr. Lucas upon this subject are well worthy of attention, and, as being offered since the first edition of the present work, may be quoted as confirming the author's views. Having contended for a specific principle in gout which he thinks obvious from the peculiar acid smell of the perspiration, and the deposit of chalk-stones, he proceeds as follows: "I am much strengthened in this opinion by the effects of the Eau médicinale and

upon the application of accidental causes, gives rise to rheumatism, as well as this variety of hydarthrus." The *atonic* white swelling was, in our author's opinion, a name suited for that variety, which commences in the cancelli of the bones. It is rather extraordinary that Dr. Good should have preferred this principle of division, and selected the epithets *entonic* and *atonic*, which involve us at once in conjecture and hypothesis, instead of a division of the subject founded upon facts demonstrated by dissection, and a choice of names, calculated to express as correctly as possible, the particular texture chiefly and primarily concerned in each variety of white swelling, and the nature of the morbid changes. When it is considered, that our author was not unacquainted with the valuable researches of Mr. Brodie, the course adopted seems the more singular. The editor, not feeling that it would be right, in the present state of surgical knowledge, to repeat the author's description of white swelling in this new edition, has been obliged to introduce a short sketch of the subject arranged according to Mr. Brodie's very important investigations. GEN. XII. SPEC. IV. Arthrosia hydarthrus.

Hydarthrus is divisible into the following varieties:

| | |
|---|---|
| α Membranæ synovialis. | White swelling commencing in the synovial membrane. |
| β Cartilaginum. | ——— commencing in the cartilages. |
| γ Ossium. | ——— commencing in the bones. |

The term, *white swelling*, has been commonly applied to enlargements of the joints, in consequence of the colour of the skin being often not at all changed, even in very advanced periods of the disease. As it expresses what is generally true, the name can hardly be found fault with on the ground of its conveying any erroneous notion; yet, it is objectionable on another principle, which is, that it is applied to several diseases of the joints, which are of very different characters in every other respect, thus tending to keep up a want of scientific discrimination, which conduces to a great deal of confusion and obscurity in practice. The texture of the joint, principally and primarily concerned in the disease, and the nature of such α A. Hydarthrus membranæ synovialis.

## SPECIES IV.

## ARTHROSIA HYDARTHRUS.

### *WHITE SWELLING.*

COLOURLESS SWELLING, CHIEFLY OF THE LARGER JOINTS; INFLAMMATION SLOW, AND DEEP-SEATED: PAIN FIXED AND SEVERE: IMPERFECTLY SUPPURATIVE: FEVER A HECTIC.

GEN. XII. SPEC. IV. Relation of the present species to the preceding two.

THIS inflammation, like that of rheumatism, attacks the larger, rather than the smaller articulations. Yet, as the joints are uniformly the seat of its assault, and it frequently runs through its course without the production of genuine pus, however severe its symptoms and fatal its termination, it has a manifest relation to the two preceding species, and ought to be arranged under the same genus.

The ordinary occasional cause is a strain, or some other injury to the joint affected; but this cause does not equally operate in all persons to the production of such a result; and it is hence obvious, that there is, as in the case of gout and rheumatism, a predisposition or peculiar diathesis favouring the origin of hydarthrus, existing in some individuals, to which others are strangers. And we find this predisposition showing itself also, as we have already seen, in the podagric diathesis, both in persons of a strong, robust, and entonic state of health, and in persons of relaxed and inelastic fibres, particularly in those who inherit a scrofulous taint. And hence the disease exhibits itself under distinct forms, seats itself in different parts of the joint, and demands different modes of treatment.

Here also a peculiar predisposition;

sometimes in robust frames;

sometimes in relaxed, exhibiting several distinct forms.

[In the foregoing editions of this work, the author took his description of white swellings chiefly from the writings of Mr. B. Bell, and adopted the very hypothetical division of the disease into *entonic* and *atonic*, meaning by the former case the rheumatic white swelling of several other writers, that most frequently takes place in young plethoric people, "possessing that firm elasticity of health and fibre, which,

shoulder, than in the more superficial joints. After inflammation of the synovial membrane has subsided, the fluid is absorbed; and in some instances, the joint regains its natural figure and mobility; but, in other cases, swelling and stiffness remain, and the patient is very liable to a recurrence of the disease, whenever he is exposed to cold, or takes much exercise. Sometimes the inflammation not only lingers in the part, but extends to other textures, and at length the cartilages ulcerate, suppuration is established, and the articular surfaces are destroyed.

Inflammation of the synovial membrane seldom attacks young children; but is very frequent in adults: a feature in which it exhibits a resemblance or relationship to the rheumatic inflammation of fibrous textures in general. Indeed, it is this species of white swelling that is particularly implied in the descriptions given by many writers of the form of the disease, to which they apply the epithet *rheumatic*.

Causes.

Mr. Brodie further remarks, it may occur as a symptom of gout, or rheumatism; or of derangement of the health by syphilis, or the unskilful use of mercury. In other examples, the affection of the joint is quite local, being produced by a sprain, or contusion, an extraneous cartilaginous body in the joint, or, what is still more usual, by exposure to cold.

Treatment of inflamed synovial membrane.

When the case has arisen from the ill effects of mercury, Mr. Brodie recommends sarsaparilla; when from rheumatism, opium conjoined with diaphoretics, and the colchicum, which is also particularly useful where the complaint is connected with gout. But, when several joints are simultaneously attacked, he deems the moderate use of mercury the most successful practice.

In all cases, however, Mr. Brodie has found topical treatment the most important. In the acute stage of the inflammation, he has recourse to leeches and even venesection; aperient medicines; saline draughts and diaphoretics; and, when the swelling and tension are very great, he prefers fomentations and poultices, but, under other circumstances, cold lotions. In the chronic stage, perfect quietude of the joint, leeches or cupping, repeated several times, and a cold lotion, are the means advised. When the inflammation has somewhat yielded, he applies large

GEN. XII. SPEC. IV. α A. Hydarthrus.

disease, form, as we have already remarked, a better and more useful basis of nomenclature.

Inflammation of synovial membrane.

The synovial membrane of the joints forms a bag, without any external opening; in this respect, resembling the peritonæum, the pleura, and the pericardium, to which Mr. Brodie conceives it also bears some analogy, both in its functions and diseases. At all events, experience proves, that it is frequently the seat of inflammation; it is in fact one of the fibrous textures, particularly pointed out by Bichat and other writers, as a common situation of rheumatic inflammation. The consequences of its inflammation, as enumerated by Mr. Brodie, are first, a preternatural secretion of synovia; 2dly, effusion of coagulable lymph into the joint; 3dly, in other cases, a thickening of the membrane; a conversion of it into a gristly substance; and an effusion of coagulable lymph and serum into the cellular texture, by which it is connected to the external parts. He has also seen, in the dead subject, adhesions of the folds of the membrane to each other; the result of previous inflammation. He believes, that, unless the disorder arise from mechanical injury, inflammation of the synovial membrane rarely terminates in suppuration. When the disease is unchecked, it may lead to ulceration of the cartilages; but, he thinks that, where this change is combined with inflammation of the synovial membrane, the affection of the cartilages is mostly the primary one, and that of the membrane the consequence of the formation of an abscess in the joint*.

Diagnosis.

The symptoms are pain in the joint, frequently very severe at one particular spot, and followed in a day or two by swelling. At first, the swelling arises entirely from fluid in the cavity of the joint; but afterwards the synovial membrane becomes thickened, or lymph is effused on its outer, or inner surface; the fluid in the joint is, therefore, less easily felt, and the mobility of the joint itself diminished. As the swelling is chiefly produced by the distended state of the synovial membrane, its shape is not that of the heads of the bones, and is modified by the resistance it meets with in certain directions from ligaments and tendons. The disease is less frequent in the hip and

* See Brodie's Pathological and Surgical Obs. on the Diseases of the Joints, p. 16 and 19, 2d edit. Lond. 1822.

tincture to many white swellings, both in the acute and chronic stages, with surprising success, according to the statements contained in his late publication *. GEN. XII. SPEC. IV.

One species of the disease, vulgarly denominated white swelling, appears, from the researches of Mr. Brodie, to commence in the articular cartilages; and this change is found to be the primary one in a large proportion of the cases, in which the hip-joint is concerned. Ulceration of the cartilages of the knee is attended with one remarkable difference from inflammation of the synovial membrane; viz. in the former, the pain is at first slight, and gradually becomes very intense; which is exactly the reverse of what happens in the latter. Neither is there, for a considerable time after the disease has begun, any evident swelling, and when this does show itself, it arises from a slight degree of inflammation in the cellular membrane on the outside of the joint, and seems greater than it really is, owing to the wasting of the muscles. No fluctuation is perceptible, as where the synovial membrane is inflamed; nor is there the peculiar elasticity, which accompanies the conversion of that membrane into a thick pulpy substance. However, in a few cases, the synovial membrane is secondarily affected, and the synovia or pus may collect within the joint. If the disease proceed, abscesses generally form, the ligaments are destroyed, and the joint becomes dislocated. The editor has seen several cases, in which the head of the tibia has been drawn into the ham; and melancholy examples of the luxation of the thigh-bone from the acetabulum, in consequence of this disease in the hip, may be seen daily in the streets of every city and town of Europe.

β A. Hydarthrus cartilaginum.

Symptoms and progress of the disease.

In the treatment of primary ulceration of the cartilages of the joints, Mr. Brodie attaches considerable importance to keeping the part motionless. It is this disease, for which he finds caustic issues particularly useful. In the early stage, local bleeding, venesection, and the warm bath, are sometimes serviceable; but stimulating plasters are inefficacious, and friction always hurtful.

Treatment.

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* See an Essay on Diseased Joints, and the Non-union of Fracture. 8vo. Lond. 1828.

GEN. XII. SPEC. IV. α A. Hydarthrus.

blisters, and, if necessary, repeats it from time to time; a plan, which he finds more effectual, than that of keeping a single blister open with the savine cerate. In a further stage, when the inflammation has yielded still more, he employs strong liniments, containing a proportion either of lin. ammoniæ, tinctura cantharidum, or sulphuric acid. The remaining stiffness will be removed by friction with the hand alone, or camphorated mercurial ointment; free exercise of the limb; or by allowing a column of water to be pumped on the joint from a height, as is practised at the watering-places.

Natural structure of the synovial membrane destroyed.

Another form of disease, affecting the synovial membrane, and commonly classed as a white swelling, is that in which the membrane is converted into a thick pulpy substance, of a light brown colour, intersected by white membranous lines. As the disease advances, it leads to ulceration of the cartilages, caries of the bones, wasting of the ligaments, and the formation of abscesses. According to Mr. Brodie's investigation, the disease is slow, but, in the end, the joint is invariably destroyed. The case is rarely seen in any other joint than the knee.

Symptoms.

The disease commences with a slight stiffness and tumefaction, without pain. At last, the motion of the joint is generally seriously impaired; though, in some cases, a certain degree of it remains. The swelling is less regular, than that produced by inflammation of the synovial membrane, and is soft and elastic, as if arising from fluid. The patient suffers no pain, until abscesses form, and the cartilages ulcerate, at which period hectic fever usually comes on, and the patient gradually sinks, unless the limb be amputated.

Treatment.

Mr. Brodie deems this form of the disease incurable. All that can be done, is to check its progress by rest and cold lotions; and to alleviate the pain attending ulceration of the cartilages by fomentations and poultices. In the end, the limb must be sacrificed for the preservation of life; at least, until some new treatment, capable of restoring the natural texture of the synovial membrane, be discovered. From certain accounts published of the effects of iodine, employed internally and externally, it would seem to deserve a fair trial. Mr. Buchanan, of Hull, applies the

the full grown, or old. The suppuration is not proper pus, nor the swelling proper inflammation*." Sinuses then generally remain, at the bottom of which, diseased bone may be felt with a probe. In the worst cases, the patient either dies hectic, or is obliged to submit to amputation. In others, a curative process ensues; and the disease terminates either with or without anchylosis, according to the extent of the destruction of the articular surfaces. In the complicated joints of the foot and hand, the chances of recovery are found by Mr. Brodie to be even less, than in larger joints.



Treatment of white swellings which begin in the cancelli.

With respect to the treatment, the plain connexion of the disease with scrofula implies that such general remedies, as are calculated to improve the state of the constitution, cannot fail to be proper. Loss of blood seems to Mr. Brodie less useful in this form of white swelling, than in some others. He has also seldom known any benefit derived from blisters and liniments: issues and setons, though serviceable, he has only found so in an inferior degree. Cold lotions check the extension of the disease to the soft parts, and retard the formation of abscesses. He lays much stress on the advantages of keeping the joint perfectly quiet, or as far as it can be done, with due regard to health. Hence, he is an advocate for mechanical contrivances for this purpose; and as far as the editor can judge, this seems to be the principle chiefly aimed at by Mr. Scott in the mass of plasters, bandages, pasteboard, &c. with which he surrounds the diseased joint and limb†. When abscesses are forming, fomentations and poultices are to be employed. When suppuration ceases, and a tendency to anchylosis begins, Mr. Brodie applies round the limb strips of linen, spread with soap cerate.

As for the means of improving the health, the pure air of the sea-coast; nourishing plain diet; steel medicines; mineral acids; and, in children, occasional mercurial purgatives; with the benefit arising from being a good deal

* On the Blood, &c. p. 391.

† See Surgical Obs. on the Treatment of Chronic Inflammation. 8vo. Lond. 1838. The merit of first suggesting this principle of treatment, the editor believes due to the late Mr. Cruttwell, of Bath.

GEN. XII. SPEC. IV. γ A. Hydarthrus ossium.

Another form of white swelling takes place so often in persons with decided marks of scrofula about them, that it is generally regarded as a scrofulous disease. It originates in the cancellous structure of the bones, and ulceration consequently takes place in the cartilages of the joint, and the disease then follows nearly the same course, as when it has commenced with ulceration of the cartilages.

Symptoms and progress of the disease.

The heads of the bones of the affected joint at first become unusually vascular, and deprived of their due proportion of lime, while, at first, a transparent fluid, and afterwards a yellow cheesy substance, is deposited in their cancelli. As the caries of the bones advances, inflammation takes place in the cellular membrane on the outside of the joint. Hence, a puffy and elastic swelling in the early, and an œdematous one in the advanced stage of the disease. At length, an abscess is formed in the joint, and, making its way by ulceration through the synovial membrane, bursts externally, after causing numerous sinuses in the soft parts. In the last stage of the disease, the bones, instead of being preternaturally vascular, become less so than in the healthy state; a circumstance to which Mr. Lloyd* has imputed the exfoliations, which sometimes occur.

Individuals and joints most liable to it.

According to Mr. Brodie's observations, the disease is often met with in children; and is rarely seen in individuals past the age of thirty. The hip and shoulder are less liable to it, than many other joints. As it is connected with a particular diathesis, it sometimes affects several joints at the same time, or recurs in others after the one originally attacked has been cured, or removed. In this form of white swelling, a degree of pain in the joint, generally not a very distressing one, precedes for some time the occurrence of swelling in the soft parts. When the cartilages ulcerate, the pain increases; but it is not severe, until an abscess has formed, and the parts over the abscess become distended and inflamed. When the abscess bursts, a thin pus, with portions of substance resembling curd, is discharged. "I conceive all such collections of matter," says Mr. Hunter, "to be of a scrofulous nature: they are most common in the young subject, and seldom found in

* On Scrofula, p. 123.

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